

The Australasian MANUFACTURER

SERVING ALL INDUSTRY

Vol. XXXV - No. 1790.

Registered at the G.P.O., Sydney, for
transmission by Post as a Newspaper.

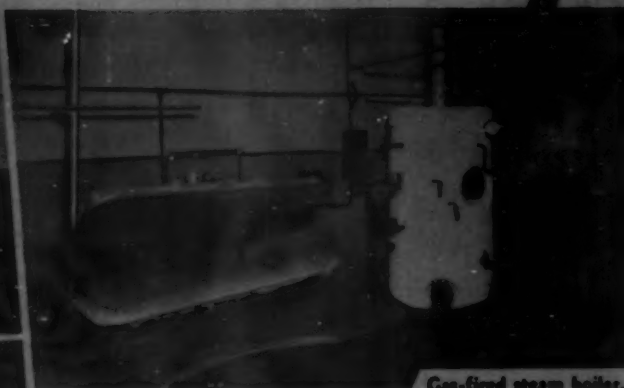
Saturday, July 22, 1950.

In large or small industrial heating
you can do it better . . . with

GAS



Gas-fired rocking hearth furnace.



Gas-fired steam boiler.



Gas-fired atmosphere furnace
for Copper brazing.

Whatever the heating process—or the product—or the time and temperature required for the job—you can do it better with gas and modern gas industrial equipment.

In all industrial heating gas brings the characteristics you need most—
Speed • Flexibility • Accurate Control • Cleanliness
• Simplicity • Adaptability • Economy.

Your Gas Company has a staff of industrial heating experts who are always ready to assist you with your heating problems . . . just dial M 6503, extension 256.

THE AUSTRALIAN GAS LIGHT COMPANY

Industrial Gas Division
Haymarket, Sydney

AFTER BUSINESS HOURS

Cannibals and Cannibalism

(By Harold Osborne).

The views expressed in articles published in this section are those of the contributors and not necessarily those of "The Australasian Manufacturer." They are selected for their interest value, whether controversial or not, and the comments of readers on the subject discussed are always welcomed by the Editor.

IN spite of their devotion to the spectacle of gladiators killing one another, and their equal absorption in seeking out new and exotic flesh dishes for their feasts, there is no record that the Romans ever combined their disregard for human life with their epicurean explorations.

Neither is there a single reference to cannibalism in the Bible, although the Book deals at some length with human frailties in other directions.

Rather, the history of cannibalism—except for a few minor lapses on the part of shipwrecked sailors and suchlike—appears to be wrap-

ped up almost solely with that of the South Sea Islands. And even then cannibalism appears to have been practised more as a tribal rite than as a result of actual desire for human flesh.

When I was gold seeking in New Guinea I questioned a number of natives who had eaten human flesh in their youth. While they seemed in general agreement that it bore a close resemblance to pork, they were doubtful of its superiority. Difficult as it is to pin down abstractions in Pidgin English, their reasons for eating appeared to be more the superstitious belief that they would absorb the courage and

pro prowess of their enemies killed in battle than actual liking for "long pig."

One notable Papuan, however, appears to have developed an "all consuming" passion for human flesh. He was the Paramount Chief of Rossel Island where I spent my childhood years, and though he was well dead before I arrived on this rocky outcrop 250 miles south-east of the "tail" of New Guinea, enough written accounts and legends remain to dovetail into a pretty grim story.

Rossel was first discovered by Bougainville in 1763 and given its present name by the captain of his ship. Apart from a visit by Sir Owen Stanley, it remained in obscurity until September 30, 1858, when one of its reefs popped up suddenly under the keel of the French ship, St. Paul, bound from Hong Kong to the Australian gold-fields with 327 Chinese coolies.

Stuck fast on the reef which formed part of Heron Atoll two miles offshore, the St. Paul was promptly abandoned by the French crew. The coolies, left to their own devices, waited until low tide and edged along the reef to the tiny three-acre atoll.

In a pair of dinghies which they rescued from the ship some of the more enterprising sailed for the mainland, taking with them the owners of the only two firearms left aboard.

On arrival they were met by a party of natives, apparently friendly, but who awaited only a moment of relaxed vigilance to fall upon

and butcher them to the last man. The bodies were then disposed of in the time honoured fashion of the cannibal isles with a resultant saving in funeral expenses.

Meanwhile the rest of the party, unaware of the fate of their companions, found life on the tiny Heron Atoll something of a struggle. In a couple of days they consumed all the shell fish, birds' eggs, and crabs to be found and were suffering agonies of thirst.

There was some excitement, therefore, when two boats were seen making their way from the mainland but this changed to apprehension when they turned out to be native canoes instead of their companions returning to the rescue.

On closer approach, however, there seemed to be little cause for alarm as the natives proved quite friendly and brought gifts of yams and taro and long bamboos filled with fresh water. They then invited half a dozen of their new friends to go with them in the canoes and the invitation to join these friendly benefactors was accepted with alacrity.

These wayfarers soon took their turn as guests of honour and principal course at the dinner table of Muwo and as the weeks drew on it became his established custom, while keeping up the gifts of fattening food to the "new Heron Islanders," to collect only those who appeared most succulent.

Having commenced cannibalism as a child by eating a playmate, Muwo's insatiable lust for human flesh had previously been held in check only by the rapidly diminish-

LOOK YOUR BEST!



STYLE PLUS QUALITY

Everywhere you hear men praising the superb quality, style and smart appearance of Akubra Hats.

Made from the finest of pure fur, your Akubra retains its "New Look" and colour throughout its long, all-weather life.

AKUBRA
hats of Quality

GEP

ELECTRICAL HEATING ENGINEERS

Manufacturers of

HEATING ELEMENTS — IMMERSION HEATERS

STRIP HEATERS — HOT PLATES

AIR, OIL, WATER AND PLATERN HEATERS

GRIMWOOD ELECTRICAL PRODUCTS PTY. LTD.

Anderson Street, Botany, N.S.W. Telephone: FJ 1752.

Interstate: C. F. Willers, Brisbane, Q.; A. E. Ackland Pty. Ltd., Melbourne, Vic.; Topp & Farmer, Adelaide, S.A.; Radio & Associated Industries, Perth, W.A.



Mark-Rite

PAINT MARKER

WHEREVER trim, clean-cut lines on roads or floors are required the "Mark-Rite" will save you time and money, reducing labour costs by up to 75%.

Operating on "gravity feed", it requires no air pressure, and self-cleaning, non-clogging valves reduce maintenance to a minimum. Interchangeable brushes in 2", 3", 4" or 5" widths; using either traffic paint, whitewash or lacquer.

Capacity 1½ gallons; consumption averages 500 to 800 linear feet per gallon.



Sole Australian Distributors:

O. T. LEMPRIERE & CO. Limited

Melbourne — Sydney — Brisbane — Perth

OTLJHP

For

DOCKS
SCHOOLS
HIGHWAYS
AIRPORTS
CAR PARKS
FACILITIES
TENNIS COURTS
MUNICIPALITIES

ing number of his fellow islanders who formed his larder. Its sudden restocking must have proved something of a windfall, therefore, for his fellows.

It also proved a windfall for the inhabitants in another way. When the rescue ship, the *Styx*, arrived six months later from the New Hebrides only one Chinaman from the 327 remained. When the fate of his compatriots—even more horrifying when told in French with suitable actions—was related, it succeeded in keeping away all but the most venturesome blackbirders who were soon to write the blackest page in Australia's history in carrying off natives willy nilly for work in the Queensland canefields.

It is in connection with the subsequent repatriation of the few natives taken from Rossel that government luggers paid isolated visits in the early 1900's.

One load of repatriates, on catching sight of their still war-like looking brothers after a long absence, hurriedly elected to be repatriated some place else; but others, who perceived former friends among the locals, landed and were still alive, at least up to the time of departure of the boat.

That some survived is established by reports from a Mr. Campbell, a representative of a missionary group who landed on the island from a government yacht in 1903 to purchase mission sites and a plantation block for my uncle, Frank Osborne.

Alone, among all the reports of their ferocious appearance, Mr.

Campbell was struck by the gentle manners of the natives. He was able to speak to them through the repatriates who quickly picked up their Pidgin English after hearing it spoken. So enthusiastic did he become that he was inclined to discount the whole story of cannibalism but it would appear that his opinion was not shared by his principals as it was over 30 years before a mission station was finally established on the island.

Frank Osborne, however, landed and started to clear his block of land as soon as arrangements were completed with the government. He had not long to wait before he struck trouble. Once again the natives showed their cunning and merely surrounded him in his small house and patiently waited for him to drop off to sleep.

To keep him company on the lonely island 250 miles from the nearest trading station, Frank had brought a kelpie pup and it was this little animal who eventually saved his life. Unable to keep awake after 48 hours, he fell asleep only to be awakened by the pup growling as the natives crept close for the kill. A few shots in the dark and they fell back to repeat the pattern again and again in the next couple of days.

After four days the natives became superstitious, convincing themselves that he was immortal and never slept. They offered to discuss terms and their chief concern turned out to be certain taboo spots said to be the temporary abode of their snake god on his

coastal visits from his mountain fastnesses. When Frank promised not to clear these he established their confidence which remains with the Osborne family after almost half a century.

Cannibalism was still practised in the villages for many years but became confined to state occasions such as the death of a chieftain. The government endeavoured to sheet home the offence during periodic visits but direct evidence was difficult to obtain, especially when the natives adopted the practice of despatching bystanders and witnesses with the same proficiency exhibited by Chicago gangsters a decade later.

In the face of a white man's presence on the island, however, the power of the hereditary chiefs gradually waned so that the relatives of dead men could be expected to take reprisals and it was this factor more than any other which led to the custom gradually falling into disuse.

Certainly Nawkun and Tarja, who acted as my nursemaids from my arrival on the island at the age of six months until I reached the age of discretion, never gave me so much as a speculative pinch, even if they did feed me on the most fattening foods. Faithful Nawkun, however, had chief's blood in him and when an unprecedented number of his older relatives ceased to exist he was informed that he had had the bone pointed at him and must die.

In the manner which still baffles scientific explanation he soon sank

into a coma in which he was quite insensitive to a scratch from a needle or even the burn of a cigarette. The menfolk, who had seen so many die in spite of their best efforts, regarded any attempt to save him as useless. My mother, however, who was new to island customs had a brainwave and produced a bottle of 880 ammonia from her photographic kit.

When this was placed under Nawkun's nose he leapt three feet in the air and after several more applications his belief in the absolute power of the spirits was finally and forever shattered. Once this link in the powerful chain of autosuggestion was broken he recovered immediately and as far as I know is still alive.

Ancient coins of many nationalities dug up around the villages and brought to us as curios, together with the rusting anchors strewn around the reefs, show that there were many more wrecks around the island than appear in records. Certainly the appetite of Muwo and the violent tropical storms which swept the reefs were hardly factors likely to preserve records or perpetuate the memories of these unfortunates.

The last wreck of any size occurred in 1922 while I was on the island and still quite young. It was the *Inaho Maru*, a 10,000 ton Japanese wheat-carrying steamer proceeding to Australia under ballast for a load of wheat.

The ship ran aground during the night and when my uncle found

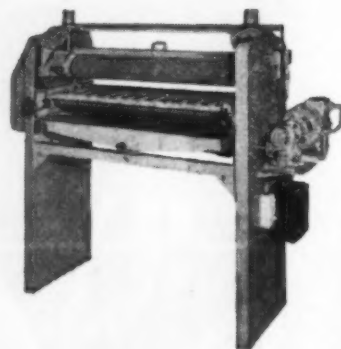
(Turn to page 43.)

THE "NATIONAL" GLUE SPREADER

*Spreads resin adhesives quickly
and economically*

Designed to meet a long-existing need for a glue spreader fully automatic and 100% efficient, the NATIONAL can be made in sizes to suit all purposes.

Rubber-covered, helically-grooved spreading rolls, and chrome-plated doctor rolls, regulated at will by micrometer adjustment, ensure the rigid control of spread necessary for economical use of resin glues. Complete with motor, the NATIONAL may be ordered in lengths to meet individual requirements. You are invited to call for test and full particulars, or for discussion of your own glue-spreading problems.



This is the outfeed side of a National Sin. diameter roll model, for use in cabinet manufacture.

NATIONAL ENGINEERS PTY. LTD.

White and Brennan Streets, Leichhardt. LM 4481-5.

Stamped Metal Products

CHAINS AND BRASSWARE - PAPER FASTENERS AND BINDERS

CHANDELIER CHAINS
JACK CHAINS
BEAD CHAINS
MIRROR CHAINS
ELECTROLIER CHAINS
CISTERN PULLS
CONNECTING LINKS
CUP HOOKS
TENT HOOKS AND EYES
BRASS AND STEEL RINGS
PICTURE WIRE
MOULDING HOOKS
BARREL BOLTS

Distributors of
Hipkiss, Kershaw Pty. Ltd.
Products

EXTRUDED BOLTS
CUPBOARD CATCHES
ELBOW CATCHES
GRIPPER CATCHES
CURTAIN ROD BRACKETS

CURTAIN ROD HOLDERS
MIRROR CLIPS
SPLIT RINGS
SPEAR HEADS
EYELETS AND RINGS
GROMMETS AND WASHERS
PUNCHES AND DIES
KEY LABELS
SASH LIFTS
SHELF STUDS
STRIKING PLATES
DESK BUTTONS
EXPANDING CURTAIN WIRE

PLATING IN ALL FINISHES

Hipkiss (Sales) Pty. Ltd.

ALEXANDRIA, N.S.W., BOX 1, P.O., ALEXANDRIA, N.S.W.

Representatives:

VICTORIA:
R. W. WARRELL PTY. LTD.
31 Niagara Lane, MELBOURNE

SOUTH AUSTRALIA:
H. W. FARLEY & E. W. FAHY
132 Grenfell Street, ADELAIDE

WEST AUSTRALIA:
N. J. CHURCH
8 "Economic" Chambers, PERTH

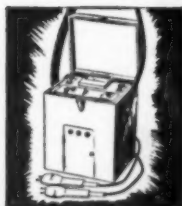
QUEENSLAND:
A. E. ALLEN
210 Queen Street, BRISBANE

TASMANIAN AGENT:
Mr. Eric T. Meagher, Macrow's Building, 147 Liverpool Street,
HOBART, TASMANIA

NEW ZEALAND AGENT:
Messrs. D. J. Robertson Co. Ltd., 84 Stafford Street
TIMARU, N.Z.

INSTRUMENTS for INDUSTRY

All industries that have need for electrical indications and measurement can, in the main, find their requirements covered by the wide range of equipment manufactured by "University." In addition to those illustrated below, we also manufacture Pyrometric Equipment, Electronic Timers, Panel and Switchboard type meters, etc. Your enquiries are invited.



BONDING TESTER

A readily portable instrument for the quick, easy checking of the bonding of aircraft, machinery or any metal framework. Leads supplied up to 66 feet in length. Model D5.



MULTI-RANGE CURRENT TRANSFORMER

For increasing A.C. range of any suitable multimeter. Secondhand 1m.a. Switch on the instrument allows choice of following ranges: 2½, 5, 10, 25, 50, 100, 250, 500 m.a.; 1.2½.5 or 10 Amps A.C. Incorporates safety press button. Ideal for use with MVA/2 (see below).



AIRCRAFT MULTIMETER

Designed especially to facilitate checking of electrical instruments and equipment fitted in aircraft. Covers A.C. and D.C. volts, millivolts, milliamps, amperes, resistance, output millivolts, resistance decade. Used by R.A.A.F. and Civil Airways. Model D12.



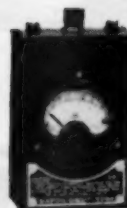
MULTIMETER

A wide range A.C./D.C. Multimeter covering voltages to 1,000 volts, current to 10 amperes D.C., Resistance to 1 megohm, Output ranges from -10 db. to +45 db. Entirely self-contained. Model MVA/2.



LOW RANGE RESISTANCE TESTER

A readily portable pocket-sized instrument entirely self-contained. Ranges: 0-20 ohms, 0-500 and 0-5,000 ohms. Model EXT.



BLASTING CIRCUIT TESTER

Readily portable, small in size. For testing detonator circuits, either series or parallel. Approved by Department of Mines, N.S.W., for use in coal mines. Model E9.

UNIVERSITY ELECTRICAL INSTRUMENTS

Made in Australia by

UNIVERSITY GRAHAM INSTRUMENT COMPANY

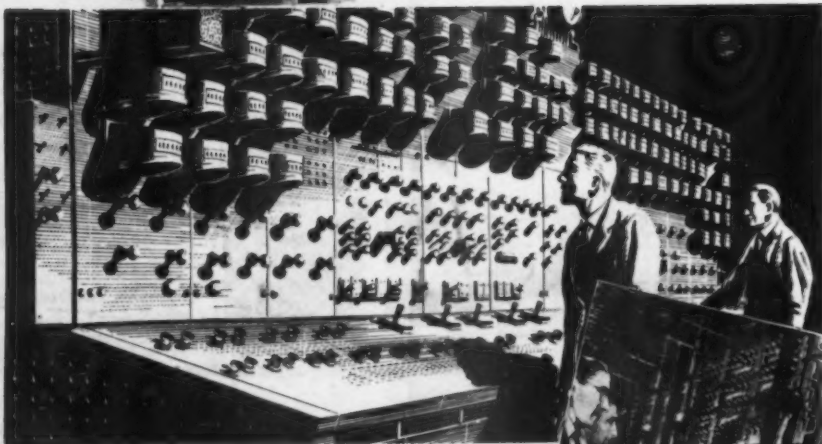
5 North York Street, Sydney

Telegrams "RAQUIP" SYDNEY

Telephone: BU 3169 (2 Lines)

Carrying a modern city's

LIGHT and POWER



Switchboards wired with

Olympic

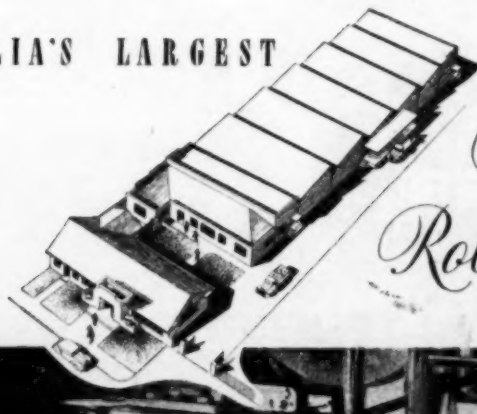
CAMBRIC INSULATED CABLES

OC.20B

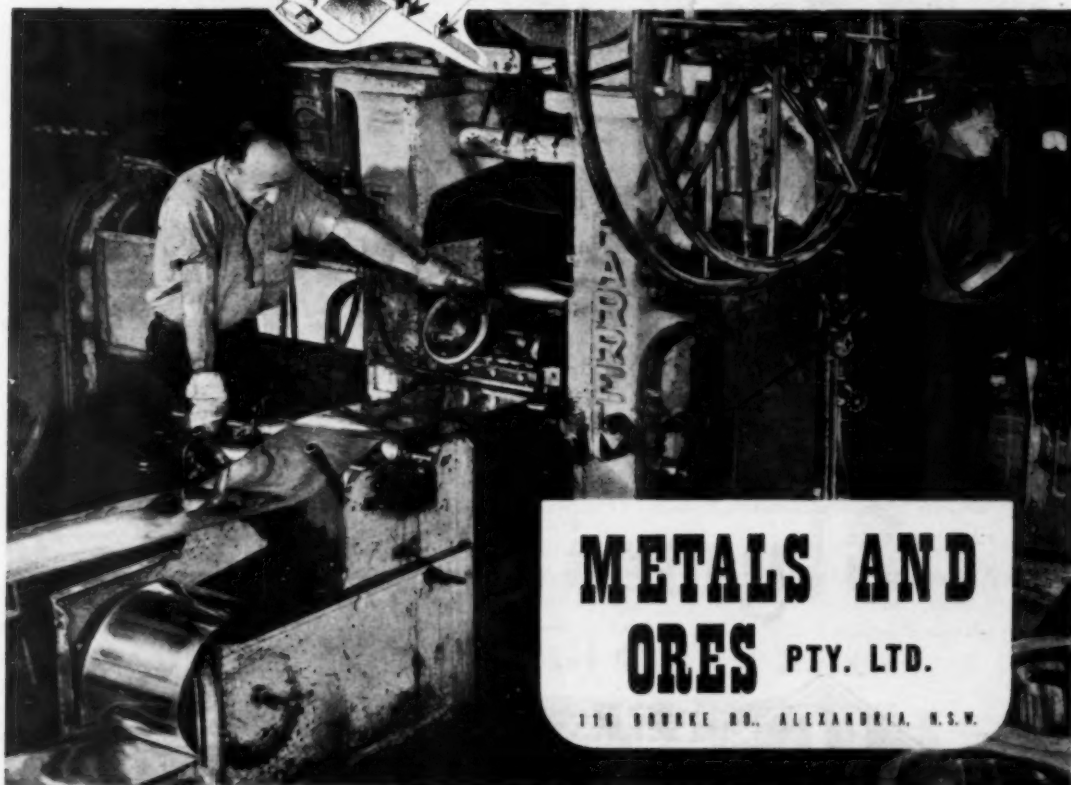
A PRODUCT OF OLYMPIC CABLES LIMITED

FOUNDERS OF THE RUBBER INSULATED CABLE INDUSTRY IN AUSTRALIA

AUSTRALIA'S LARGEST

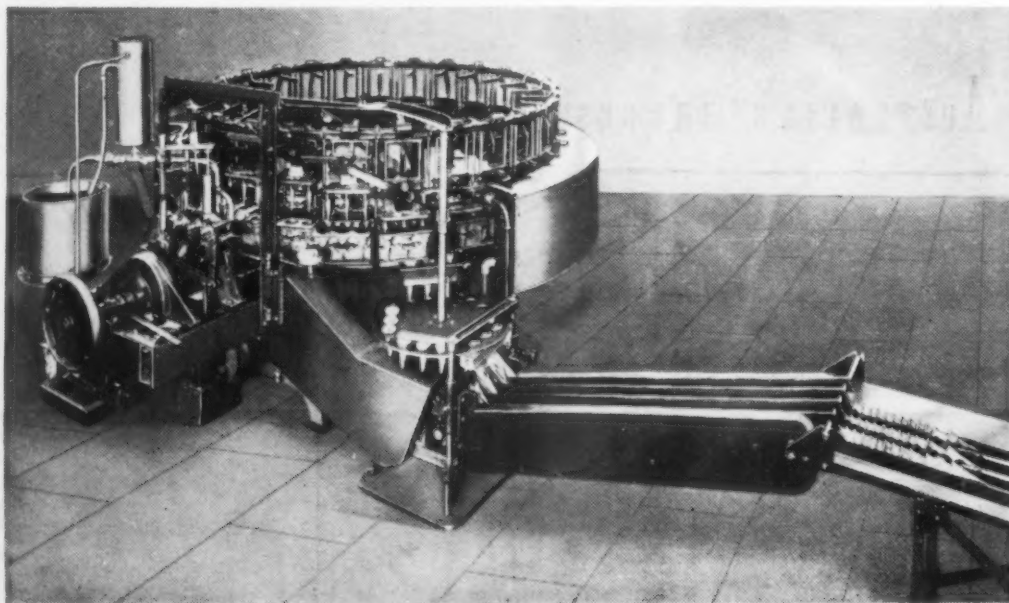


*Strip Zinc
Rolling Mill*



**METALS AND
ORES** PTY. LTD.

110 BOURKE RD., ALEXANDRIA, N.S.W.



Leadership proved by numbers of achievements . . . HERE IS ANOTHER!

THE C.C. ICE CREAM CONE MACHINE

The "built-in" accuracy of "C.C." Products has assisted many manufacturers in planning production. For many years "C.C." has been engineering, designing and producing machines that meet the demands of modern industry for greater accuracy, higher speed and easier operation.

A typical case is the Ice Cream Cone Machine, illustrated above, which is totally automatic. This is another example where the versatility and advanced engineering of "C.C." solved a very difficult problem.

Other "C.C." Products include:—

Universal Tool and Cutter
Grinders, Surface Grinders,
Lathe Chucks, Hydraulic
Presses, Swaging Machines,
Arbor Presses, Printers' Saw
Benches, Eye Protection
Shields, Duncan Strapping
Machines, Logging Saws, Drop
Hammers, Gauges.

Telephone:
MW 2787
(4 lines)



**ENGINEERING
INDUSTRIES Ltd.**

Cables and
Telegrams:
"Toolengco,"
Sydney.

213 BRIDGE ROAD, GLEBE, N.S.W.

Move it the

Ransomes

Electric Way



(At left) Ransomes Forklift "20." Lifts a ton 10 feet in under 30 seconds. Turns in less than its own length.

(At right) Ransomes Forklift "40." The "40" is a 2-ton truck available with solid rubber and pneumatic wheels.

(Below) ENUB with 4-wheel steering and low elevating platform. This truck is of 2 ton capacity.



Check list of other Ransomes equipment

1-Ton Trucks, with fixed and elevating platforms.

2-Ton Trucks, with fixed platform —

Large, high platform
Large, low platform
Small, low platform

With elevating platform —

Large, high platform
Large, low platform
Small, low platform

4-Ton Trucks, Types N.U.H. and E.N.U.H., with fixed and elevating platforms

Crane Trucks, 30 cwt. carrying capacity and 10 cwt. lift.

Stevedoring Truck, Type S, 2-ton capacity

Tiering Truck, Type T.N.U., 2-ton capacity

Tractor, Type T.E., 1-ton hauling capacity

Tractor, Type T.J., up to 6 tons hauling capacity



Contact us to-day for full particulars and illustrated data

MEL.: 188 Bay Street, Port Melbourne, Vic.
(MX 6043)

BRIS.: 121 Eagle Street, Brisbane, Qld.
(B 3327)

NEWCASTLE: Organisation Pty. Ltd., King & Parkin Streets, Newcastle.
(B 1637)



Westons

SOLE: WESTON'S PTY. LIMITED

WESTON HOUSE, MACQUARIE PLACE, SYDNEY
TELEPHONES - BU 3346-7-8 and BU 3761

ADEL.: 93 Flinders Street, Adelaide, S.A.
(Cent. 5527)

PERTH: 18 William Street, Perth, W.A.
(B 6693)

CAIRNS: P. L. & G. Potter, 91 Grafton Street, Cairns.
(Cairns 3188)

COATED ABRASIVES

by
OAKLEY

EMERY • WELLINGTONITE
(ALUMINOUS OXIDE)

AND
CARBORUNDUM CLOTH

In Sheets, Rolls, Belts, Discs & Shapes

FOR ALL
**METAL & ENGINEERING
TRADES**



Representatives:

H. S. INGAMELLS & CO.
408-410 Collins Street
MELBOURNE
and
25 Clarence Street
SYDNEY

"Aberdeen" CANVAS GOODS FOR INDUSTRY

In every type of industry there is a need for canvas. Whether it be for machinery covers, welding screens, conveyor belts, canvas curtains or tarpaulins. Industry always has canvas needs to be satisfied, and for over 55 years we have been manufacturing all types of canvas goods for industrial and domestic needs and can meet all requirements. If you have any special problems or applications, we will be glad to help. Write or 'phone to Industrial Dept., 33 Regent Street, Sydney — M 4181-2-3.

- Tarpaulins
- Machinery Covers
- Welding Screens
- Canvas Curtains
- Conveyor Belts
- Chairs, tables, marquees, etc., for any function can be hired from Hire Dept.

WRITE, CALL OR PHONE

SMITH COPELAND & CO. PTY. LTD.

33 REGENT STREET, SYDNEY

PHONE: M 4181-2-3

Makers of Finer Canvas Goods for Over 55 Years



DIE CASTINGS

• **GRAVITY**

ALUMINIUM
ALLOY

• **PRESSURE**

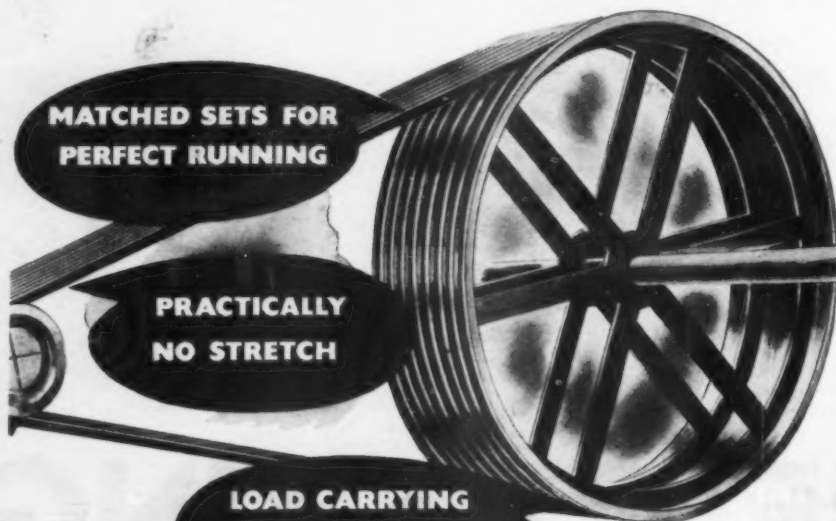
ZINC BASE, BRASS
& ALUMINIUM

♦ ♦ ♦

Enquiries Invited —

 **THE EFCO MFG CO. PTY. LTD.**

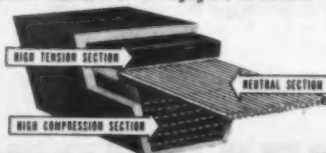
108 PRINCES HIGHWAY, ARNCLIFFE, N.S.W. Telephone LX1231



**LOAD CARRYING
CORDS IN NEUTRAL
SECTION**

GOODYEAR E.C. CORD MULTI-V BELTS are No. 1 choice on short, heavy drives where smoothness is a "must". They are built with a precision that produces belts of uniform, accurate cross-section and length. This ensures a balanced drive with each belt pulling its weight. If your drive calls for V-belts, get the full story on Goodyear E.C. Cord Multi-V Belts before you place an order.

See below how the load-carrying cords are placed in the neutral section of this Goodyear belt away from extreme tension and compression. The surface wear is taken by a tough fabric envelope with the weave on the bias. It is treated to cut out grabbing and unequal pull. Goodyear E.C. Cord Multi-V Belts come in matched sets with stretch reduced to a negligible minimum.



M19/PPD

Industrial Rubber Products

BELTS:

Compass Endless Cord, Flat and Multi-V; Conveyor; Elevator; Special Purpose.

HOSE:

Air; Water; Steam; Sanitary; Acid; Oil; Petrol; Welding; Distillers'; Section; Agricultural; Spray and Special Purpose.

JOINTING:

Air; Steam; Hot and Cold Water; Vacuum.

Consult the G.T.M.

(GOODYEAR TECHNICAL MAN)

He's practical; he knows your problems. Ask him to specify the correct, economical rubber product for your job. Phone or write the nearest Goodyear Branch or Distributor.

GOOD YEAR
FAMOUS
E.C CORD
MULTI-V BELTS

A new engineering material with applications in every industry

THERE is now available to engineers a basic material of the greatest interest, offering new solutions to old problems in many industries.

Ferobestos Technical Plastics are non-metallic laminated asbestos materials, bonded with special thermo-setting resins into hard, insoluble, infusible substances. Developed by Ferodo Ltd. before the war, they were widely used in aircraft and other war equipment. Increased output is now fully available for the needs of industry throughout the world.

Ferobestos Technical Plastics are manufactured in standard and special grades. These have varying composition and properties, but the following characteristics are common to all of them: high strength in relation to weight, high resistance to heat and chemical action, low moisture absorption, low starting and running friction, and fair electrical resistance. The

physical properties of the four principal grades are summarized in the accompanying table.

Easily lubricated by almost any fluid (best of all, water) and highly resistant to abrasion even when unlubricated, Ferobestos Technical Plastics have proved outstandingly successful for bushes and bearings of many kinds, rubbing-pads, guides, gear-wheels, rollers, valve discs and seatings, steam piston and pump-bucket rings, pump and compressor blades, etc. Panelling and flooring for aircraft are among many applications requiring light weight and structural strength.

Ferobestos Technical Plastics are easily machined. They are supplied in rod, tube, or sheet form, or (to special order) as mouldings. Engineers are invited to write for further details and information regarding particular Ferobestos applications in any industry.



FEROBESTOS TECHNICAL PLASTICS
Physical and Mechanical Properties

GRADE	ST	LA	LF	P.10
BASE	Adhesive resin	Asbestos Cloth Heavy Wool	Asbestos Cloth Fine Wool	Asbestos Compos- ition
Tensile Strength (lb./sq. in.) ...	18,000	7,800	12,000	9,000
Compressive Strength (lb./sq. in.) ...	30,000	34,000	42,000	35,000
Shear Strength (lb./sq. in.) ...	15,000	10,000	12,000	9,000
Crack-breaking Strength (lb./sq. in.) ...	23,000	11,000	19,000	15,000
Impact Strength (ft./lb.) ...	3	2.5	4	1.8
Fatigue Strength (tons/sq. in.) ...	3.75	1.8	2.55	—
Density (gm./c.c.) ...	1.67	1.67	1.74	1.75

Tests carried out under B.S. or other approved specification

Manufacturers:

FERODO LIMITED, CHAPEL-EN-LE-FRITH, ENGLAND

A Member of the Turner and Newall Organization

FEROBESTOS Technical Plastics

AUSTRALIAN DISTRIBUTORS:— QUEENSLAND (BRISBANE): Philip Frankel Pty. Ltd., Elphinstones Pty. Ltd., Westcott Hazell Engineering and Steel Ltd., NEW SOUTH WALES (SYDNEY): Westcott Hazell and Co. Ltd., Westcott Hazell Engineering and Steel Ltd., VICTORIA (MELBOURNE): A. L. Campbell and Co. Pty. Ltd., Westcott Hazell Engineering and Steel Pty. Ltd., E. A. Martin and Co. Pty. Ltd., SOUTH AUSTRALIA (ADELAIDE): A. L. Campbell and Co. Pty. Ltd., Dunne and Co. Ltd., Westcott Hazell Engineering and Steel Ltd., WESTERN AUSTRALIA (PERTH): William Adams and Co. Ltd.

Everything
under
Control



Industrial problems are not so easily solved! But have you considered how these precision snap-action switches may be able to serve you, as they are already doing in an immense range of industrial equipment such as Coin Operating Machines, X-Ray Equipment, Automatic Drill Presses, Automatic Tapping Machines, Automatic Milling Machines, Die Presses, etc. Let us show you how they can help you! Burgess Micro-Switches have a movement differential from 0.005 to 0.008, and are approved by the B.S.C. for operation at 250 volts A.C. to 15 amps.

Using a **BURGESS MICRO-SWITCH!**

BELLCO

PTY. LTD.

Sales Office: 340 Queen Street, Melbourne FJ3611

Distributors:

SYDNEY: Bellco Pty. Ltd., 30 Carrington St.
ADELAIDE: Newton McLaren Ltd., Leigh St.

BRISBANE: Evans, Deakin & Co., Charlotte St.
PERTH: Horsburgh Bros., 931 Hay St.

The DOT line of **TRIMOUNT** TUBING AND WIRING **CLIPS**

PREVIOUSLY IMPORTED FITTINGS NOW
BEING MADE IN AUSTRALIA!



THE NEW
FASTENER
LEFT KNOCKS
OUT THREE
PARTS FROM
YOUR ASSEM-
BLY.

Made in our Australian factory on Australian developed machines and employing all Australian material, "Trimount" Clips are already being used by many industries. These time-saving fasteners take the place of screwed-on clips for holding tubes and wires to their supporting structures.

"Trimount" Clips are economical, quickly attached and permanent. Every clip is rust-proof and will keep on doing a good job.

25 types of "Trimount" Clips are now available. Others will be added as required by manufacturers.

APPLIANCE • ENGINEERING • RAD
• ELECTRICAL • AUTOMOBILE

CARR FASTENER COMPANY OF AUSTRALIA LIMITED

Enquiries are invited from all trades requiring corrosion-proof clips in modern design. Such enquiries should be addressed to the Company's Sales Engineers in Adelaide, Sydney or Melbourne.

IN SYDNEY: Mr. S. B. Tonkin, 85 Commonwealth Street.

IN MELBOURNE: Mr. C. A. Muller, 355 William Street.

IN ADELAIDE: Carr Fastener Co. of Australia Limited,
Royal Park, Alberton I, S.A.

Telegraphic Address: "Carrfast," Adelaide

NO TOOLS REQUIRED
ONE PREPARED HOLE
INSTALLATION IN ONLY ONE SUR-
FACE
SAVES TIME IN
SMALLING DOWN



DRILL OR PUNCH HOLE



INSERT FASTENER



SNAP IN TUBING



SNAP IN WIRING HARNESS



The Australasian MANUFACTURER

Established 1916

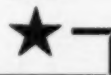
35th Year of Service to Industry

Telephones: Sydney, BU 3493, BU 3494,
Melbourne, FJ 3256.

Postal Address: Box 1687, G.P.O., Sydney, and
Box 4525, G.P.O., Melbourne.

Australia's National Manufacturers' Newspaper circulating in all States, New Zealand and Overseas. A weekly newspaper devoted to industrial efficiency and the manufacturing progress of Australia. Subscriptions within Australia and New Zealand (including Annual Number), £1/10/-; Great Britain and Possessions, £2; Foreign, £2/10/-. All subscriptions payable in advance. Microfilm subscription by arrangement.

PAGE FIFTEEN JULY 22, 1950.



Australia's Chemical Industry Marked Production Increases in Ten-Year Period

"Not only does the chemical industry produce the essential building stones for many other industries but, more important, it represents an aggregate of techniques, processes, and unit plant based on an exact knowledge of the chemical composition of its products. Herein lies its true economic value to the country, because the techniques which it develops, being fundamentally scientific, are equally applicable to other technologies, and eventually result in an increased precision and efficiency throughout industry in general. When the starting products of a new industry are exactly defined in composition, a long step has been taken towards reproducibility and exact knowledge of the industry's finished products, no matter how complex they may be. This close connection gives Australian industry an advantage against overseas competitors in that it allows the adaptation of products to suit exactly the requirements of Australian technologies, ultimately improving both to an integrated whole."—N. F. B. Hall, A.A.C.I., Chief Chemist, Taubmans Ltd., Sydney, and Taubmans Pty. Ltd., Villawood, New South Wales.

IT would be difficult to imagine a more concise, an abler, a finer, or a more richly deserved tribute to the great chemical industries of the world than that quoted above from the pen of Mr. N. F. B. Hall, an important figure in the Australian chemical world.

For no man can compute what the chemical industries mean to a nation. Their benefits are as widespread as they are manifold, as fundamental as they are universal.

The uncertain conditions prevailing at the present time give solid ground for rejoicing that, since the outbreak of World War II, developments in Australia's chemical industries have been both consistent and widespread. This is evident from the fact that whereas in 1939 factories engaged in the manufacture of chemicals, including explosives, numbered two hundred and fifty, these, by 1948-49, had risen to over four hundred. Factory employees and value of wages paid, registered corresponding increases—from 8,100 employees with a pay cheque of £1,592,000 in the earlier period to 14,600 employees earning £5,944,000 in the later.

Indeed, it is not only interesting, but also highly significant, that during the last ten-year period few branches of production within the Commonwealth have registered more marked increases. Witness, for example, the rise in the value of materials used—from £4,195,000 to £13,441,000; in the value of production—from £4,640,000 to £13,738,000; and, perhaps most important rise of all, in value of output—from £9,000,000 to £30,156,000.

The manufacture of heavy chemicals and acids (including explosives) occupies pride of place, one hundred and ninety-two of the chemical factories, with some 9,100 employees, being so engaged. The balance produce pharmaceutical and toilet preparations. Here are some of the

major lines being turned out:—Proprietary medicines—liquids (£2,501,667); ointments (£220,393); pills, tablets, etc. (£1,983,320); powders (£780,485). Toilet preparations—face creams (£202,536); hand lotions (£86,629); other skin creams (£246,513); dentifrices (£983,234); hair preparations (£398,760); face powder (£201,257); lipstick (£290,700); rouge (£120,235); toilet soap (£2,097,319); shaving soap and cream (£235,412); talcum powder (£487,841); flavouring essences (£743,351); disinfectants (£576,876); insecticides and vermin sprays (£1,212,403); and weed killers (£175,084).

Everything points to a continuance of this steady growth, a growth which is being accelerated by the local production of a number of items indispensable to modern chemical production—rubber-lined, glass-lined, resin-coated, solid resin industrial glassware, automatic control and measuring equipment, together with an array of items which are the essential requisites of continuous advance is this highly significant department of manufacture.

Right here "The Manufacturer" desires to raise its voice on behalf of a number of chemical industries established in this country during the dark days of World War II, industries initiated under the exigencies of war, with which inevitably are associated high construction and high running costs. Is it too much to ask that the Federal Government shall see to it that the courage, initiative, and enterprise displayed in those troublous days will not be overlooked in these far-from-trouble-free times? Rather must genuine efforts be made to protect these undertakings which, when the need arose, served their country valiantly and well.

"MICROID" SELF-LUBE BEARINGS NEW DISTRIBUTORS FOR ADELAIDE AND PERTH

In our issue of 8th July, owing to a printer's error, wrong copy appeared in the advertising space for "Microid" Self-Lube Bearings, which are manufactured by Nilsen Cromie Pty. Ltd. in conjunction with Glover & Goode Base Metals Pty. Ltd.

We desire to draw the attention of our readers to page 5 of our 1st July issue on which appears correct listing of distributors of this product. As from that date Harris, Scarfe Ltd., Grenfell Street, Adelaide, and Watson Bros. Ltd., 363 Murray Street, Perth, have been appointed distributors in South Australia and West Australia, respectively. Distributors for other States are: Victoria, as previously; New South Wales, J. C. Ludowici & Son Ltd., 117 York Street, Sydney; while in Queensland the factory representative is K. H. Dore, Heindorff House, 171 Queen Street, Brisbane.

We regret any inconvenience which may have been caused the manufacturers and their newly-appointed distributors. — Editor.

As has been pointed out in expert circles, a heartening thought for the future of Australia's chemical industries is that world trends in Science favour the newcomer into the field—always provided that the newcomer utilises with consummate skill the interminable array of new aids to efficient production.

Here, then, is a challenge to the great chemical undertakings of this nation, a challenge likely to be met by them in the same spirit of science and high endeavour as has raised them to the eminent heights they to-day occupy.

Pithy Jottings of Industry and Industrialists

S.A. MANAGER— H. ROWE & CO.

Mr. Tom Mottram, South Australian manager of H. Rowe & Co. Pty. Ltd., died on June 14 from injuries received in a road accident in Melbourne. He was affiliated with many trade and social organisations in Adelaide.



MR. J. G. BAKER,
S.A. Manager for H. Rowe & Co.
Pty. Ltd.

Mr. Mottram, an Englishman, came to Australia in 1923, joining the staff of Australian General Electric Pty. Ltd. In 1925 he took over the management of the electrical department of the Myer Emporium, Melbourne, two years later he returned to Australian General Electric as branch manager, and later chief metropolitan traveller. In 1940, on his return from service with the R.A.F. and R.A.A.F. as Flight Lieut. in

the Middle East, he took the post of sales manager for H. Rowe & Co. Pty. Ltd. At the end of 1948 he took over the management of the Adelaide branch of this company.

Following on the death of Mr. Mottram, H. Rowe & Co. Pty. Ltd. announce that Mr. J. G. Baker, B.Sc., has been appointed the Company's South Australian Manager.

Mr. Baker is at present Manager of the Company's Instrument Department at Head Office, a position to which he was appointed soon after joining Rowco as a Technical Representative in 1946.

After gaining his B.Sc. at the Melbourne University, he spent four years' war service in the R.A.A.F. as Flt.-Lieut. and on leaving the service became a Lecturer in Physics at Swinburne Technical College, Melbourne.

The appointment of Manager, Head Office Instrument Department, will be taken over by Mr. A. F. Love.

HENDERSON'S SPRINGS TO START S.A. BRANCH.

Henderson's Federal Springs Works is branching out into South Australia.

A subsidiary company has been formed to make light engineering components in S.A. All capital will be provided by the parent company.

DISTRIBUTION OF CURRENT ANNUAL.

Circulation of the 1950 Industrial Annual of "The Manufacturer" proceeds at a speedy tempo in each of the capital cities of Australia, with copies going across the Seven Seas to the great industrial centres abroad. The demand for the latest issue has been so keen that already supplies are reaching a dangerously low mark. Requests for additional

copies for distribution at home and abroad must, accordingly, be made with the least possible delay. This, by the way, is particularly true of the limited "de luxe" edition in heavy durable binding for permanent reference and filing.

MELBOURNE OFFICE MANAGEMENT CONFERENCE.

The three-day Office Management Conference held at the Exhibition Building, Melbourne, under the auspices of the Institute of Industrial Management, was an outstanding success. Conspicuous features of the gathering, the first of its kind, by the way, in the Commonwealth, were working exhibits by forty-five firms of the world's latest in office machines, equipment, and systems, supplemented by films showing the equipment in operation in offices. In addition, ten lectures on office management and routine were given by specialists in various fields.

Unquestionably the conference has brought about a keener appreciation of the importance of high efficiency in office administration and of the many and varied office aids at the disposal of the discerning executive.

SAVING EYESIGHT IN INDUSTRY.

Methods of reducing eye injuries and avoiding eyestrain are specialised features of general safety which have, in the past received scant attention. In his presidential address to the Ophthalmological Society of Australia in 1944, Dr. G. Barham Black said, with reference to industrial eye injuries: "It will have been obvious to every ophthalmologist that an enormous number of such accidents is occurring daily in Aus-

tralia, and that a very large proportion of them could be prevented by safety devices." Furthermore, New South Wales workers' compensation payments for eye injuries alone totalled £180,000 in 1948.

An interesting display based on an investigation of eye protection is now appearing in a window of the Sydney Council Building, George Street. A large panel indicates that there are four basic approaches to the problem of saving eyesight in industry. Illustrations of good practice drawn from Australian sources are given prominence in the display as are a range of available eye protectors which comply with the tests and specifications shortly to appear in a code prepared by the Standards Association of Australia. Of particular interest to management is the fact that many of these latest protectors are of Australian manufacture.

The display which should be of interest to management, safety engineers, and workers alike, will remain until the end of July.

"MANUFACTURER" 1950 ANNUALS

EXTRA COPIES AVAILABLE

"The Manufacturer" Annual (1950) is being acclaimed as a notable contribution to Australian industrial journalism. Many leading organisations have ordered extra copies for distribution among their business connections overseas.

Additional "Manufacturer" Annuals, including a number of copies specially bound in a heavy, durable cover are still available, but application for them should be made without delay to avoid disappointment.

Any inquiries or requests for further information should be referred to the Regional Director, Industrial Welfare Division, Warwick Building, 15 Hamilton Street, Sydney.

MAGNET CHEMICAL CO. INQUIRIES.

We remind readers that inquiries in response to the invitation published in the Annual Number of "The Australasian Manufacturer" by Magnet Chemical and Supply Co., Sydney manufacturing chemists and manufacturers' agents, for distributors or commission agents to handle their products, and for overseas agencies for chemical, electrical, engineering and other good lines, should be addressed to the Sales Manager, Box 2301 M, G.P.O., Sydney.

NEW DROP FORGING COMPANY.

With a nominal capital of £500,000, National Forge Pty. Ltd., has been registered in Melbourne. The Company will manufacture steel chassis, drop forgings, and be general engineers. It will operate at Footscray, Melbourne, on the same lines as Australian Forge and Engineering Pty. Ltd., of Sydney. Subscribers are Messrs. C. M. G. D. Boulton, G. J. Cullen, E. P. Hollingdale, J. M. McShane, R. G. Morgan, and A. C. Tregonning, all of Sydney.

TO MAKE UNIVERSAL JOINTS.

A new subsidiary Company, Mechanics Universal Joints Pty. Ltd., is being formed by Repco Ltd., of Melbourne, to make universal joints under licence in Australia.

An agreement for this has been made with Borg Warner International Corp., U.S.A. No public issue will be made to finance the new company, which will be wholly owned by Repco Ltd.

Australian production of universal joints will mean an appreciable saving in dollars, directors state.

Construction of factory buildings will begin immediately.

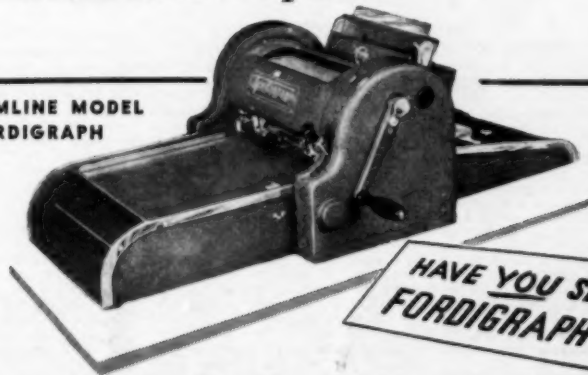
SUBSIDY FOR COUNTRY FACTORIES.

To readers of this journal, the principal points of interest in the Victorian Government's decentralisation programme as outlined by the Governor, Sir Dallas Brooks, at the recent opening of the new State Parliament, were the provision of an additional £2,000,000 to subsidise the cost of imported materials used in the construction of decentralised factories in country areas; and the relaxing of building controls on country factories, amenities, and institutions, except where rapid industrial expansion is causing an acute housing shortage.

These practical steps to encourage further industrial decentralisation are worthy of the highest commendation, and "The Manufacturer" trusts they will be emulated by all the other States.

STREAMLINE Your *Copying Without Inks, Stencils, Gelatine or Absorbent Paper!

STREAMLINE MODEL
FORDIGRAPH



... AND GET COPIES IN 1 TO 7 COLOURS
AT A TURN OF THE HANDLE

* DIRECTORS' RECORDS

BOARD REPORTS

QUOTATIONS

COST RECORDS

BALANCE SHEETS

PRICE LISTS

DIAGRAMS

CHARTS—TABLES

SKETCH PLANS

FLOW SHEETS

MODELS FROM AS
LOW AS £25

Type anything, write anything, draw anything on paper and the Fordigraph will reproduce it *without inks* in up to 7 colours... without interleaving on any weight of paper, from air mail tissue to manilla card.

Colour registration is automatic—each and every colour is always in hair-line register making Fordigraph Copies invaluable for ruled work and charts, wiring diagrams, plans and schematic drawings, etc.

Here's the machine every office, every business needs—a simple, easy-to-operate, versatile machine handling memos, lists, inventories or complicated forms and drawings, plain or in colour, with equal facility.

Get the facts on Fordigraph—eleven models, from footstep to brief and endless feed, hand or electric.

Fordigraph
100% BRITISH

FORDIGRAPH COMPANY (AUSTRALIA)

Head Office: Dymock's Building, 428 George Street, Sydney. MA 9511

Victoria: Vaughan House, 108 Queen Street, Melbourne. MU 7759

Sales and Service: Agencies in Adelaide, Brisbane, Perth, Launceston

F.J.2



STANDARD



NIPPA



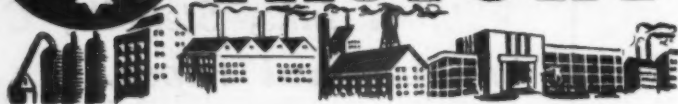
MIDGEY

FORDIGRAPH ROTARY REPRODUCERS—MULTILINEX SYSTEMS MACHINES

Our editorial representative in each State makes regular calls on manufacturers, but if you wish to see some particular phase of your business given publicity, communicate immediately with the Editor, and he will arrange for a representative to call.



Around & About the FACTORY



A digest of new factory and plant construction, additions, alterations and improvements, and operating news of Australian industry.

Acrylic Number Wheels and Pinions For Service Meters

During the last few years considerable thought has been given to the choice of materials employed in the manufacture of number wheels and pinions as used in the direct reading clock-works for gas, water and electricity meters, and as a result consideration has been given both to the use of acrylic plastic and also polystyrene as alternatives to tin alloy. Although this metal possesses many excellent properties, including a reasonably low coefficient of friction and good stability under varying climatic conditions, it is relatively expensive.

Prior to the 1939-45 war some Continental manufacturers made use of polystyrene for the moulding of number wheels and pinions, but this was not entirely successful. Although possessing a lower specific gravity than tin alloy, together with a very low coefficient of friction, good resistance to moisture and availability in a wide range of colours, polystyrene was not able to withstand service conditions entailing exposure to temperatures much in excess of 150 deg. F. (65 deg. C.). Moreover, as this plastic is subject to solvent attack by petrol, damage is caused when the wheels and pinions of the clock-work assembly are immersed in this spirit. Unfortunately it is the practice amongst a number of electricity undertakings to use petrol as a cleaning medium. The use of polystyrene, therefore, is not advisable, particularly in this case.

H. J. Thormann Engineering Co., Ltd., Boreham Wood, Herts., England—Australian Agent, Mr. A. K. Wenkart, 66 King Street, Sydney—are well known manufacturers of number wheels and pinions for the meter trade and they have carried out a good deal of research work on the use of new materials. Throughout recent years this company has conducted a continuous research with a view to discovering a material for the manufacture of number wheels and pinions which should combine all the advantages of both. In collaboration with the Imperial Chemical Industries Ltd., Plastics Division, they have recently developed a range of me-

ter wheels and pinions moulded from acrylic resin. This offers certain practical advantages over polystyrene owing to its extra strength, higher softening point, very low coefficient of friction and outstanding resistance to commercial petrol, and a number of chemicals.

Unfortunately a wide gap lay between the decision as to which type of material to employ and the mastery of the various processes such as moulding, machining and finishing the wheels and pinions in this new material. On top of all this a specially designed injection moulding machine had to be built in their factory, as such machines as were available in this country appeared unsuitable. At every corner new

difficulties presented themselves. The very able assistance and guidance freely given by the Engineers of the Plastics Division of the Imperial Chemical Industries Limited, was invaluable throughout these trials.

Using acrylic moulding material, H. J. Thormann Eng. Co. Ltd. are now able to produce wheels and pinions which comply with all the exacting requirements of meter manufacturers and users. In particular, these parts, which are manufactured by injection moulding using acrylic resin, not only possess good mechanical and electrical properties, but do not vary in dimensions. As the shrinkage variation of certain acrylic resins in the mould is only one third of that of polystyrene it is possible to exercise a far greater control over the dimensions of the finished product than when working with polystyrene, cellulose acetate and other plastics.

Next on the scene was what was appropriately designated the "Push-On" Type. It can at least lay claim to one virtue—it was easy to use, simply pressed against the outer wall of the tyre. But this point was small consolation to the motoring fraternity since the gauge, instead of ascertaining the pressure of the tyre, merely informed the user as to what resiliency the rubber in his tyres possessed. Needless to say, praises for the "Push-On" Type were not sung far and wide, and this gauge sank shortly into oblivion.

What ideas motorists entertain towards present-day tyre gauges can be deduced from the high sales volume of manufacturers—in actual instance, the intensive demand that exists for R.V.B. Tyre Gauges which are 100% in line with the time-proven design and production techniques adhered to by principal manufacturers throughout the world.

Here is an Australian company whose tyre gauges are sold not only throughout Australia but overseas as well. It is convincing testimony to the standards of precision manufacture maintained by the company ensuring positive accuracy to meet the close tolerance of reading demanded for balloon and low pressure tyres and also to meet the close pressure range recommended by contemporary car manufacturers.

Designed on the direct-action principle as the surest way of determining correct inflation, the R.V.B. range comprises pocket type gauges to measure 7-50 lbs. pressure and bent-neck, swivel-head and dual-head models for 10-140 lbs. pressure. From the R.V.B. Engineering Products Pty. Ltd., headquarters at Spotswood, Victoria, comes a tyre gauge for every motorist, be he owner of car, truck, bus or tractor, or motor cyclist. In addition, other models in wide use to-day are service types for the garage and service station owner. Besides automotive, the R.V.B. concern also fulfils tyre gauge needs on the aeronautical side.

In efficiency as in appearance, tyre gauges have undergone vast changes over the years. Development has been a slow process but each new model has been one step nearer to the ultimate ideal—the tyre gauge as we know it to-day.

Australia Makes the Most Modern Type Tyre Gauge

A Tribute to Engineering Leadership

It is surprising how much people take for granted. They use the telephone, telegraph, wireless, motor car, and all manner of mechanical marvels, but how often is a thought spared to the time when these things were not even believed possible? "What a gift it must be, being able to invent—that's the easy way to make your fortune", is a common enough thought expressed; yet into virtually every invention goes, as Thomas Edison himself once said, "10% inspiration, 90% perspiration." And the same can be said for the tyre gauge.

When a motorist checks tyre pressures with a modern tyre gauge—the necessity of which practice more and more motorists are coming to realise in reducing expensive tyre replacements through maintaining correct pressures—he is using an instrument into which has gone a wealth of research and experimentation. Like practically all other inventions, the tyre gauge has been subject to the continual striving for perfection.

There was felt, as is to be expected, much triumph on the part of its creators, when the Rubber Balloon Type Tyre Gauge made its debut. This model featured a rubber bag or balloon in the barrel but pride in its performance was due for a fall when balloon and lower pressure tyres appeared. A wide range of tolerance rendered the gauge ineffectual and then again, another snag showed up in the rubber bags themselves; they cracked, and soon perished.

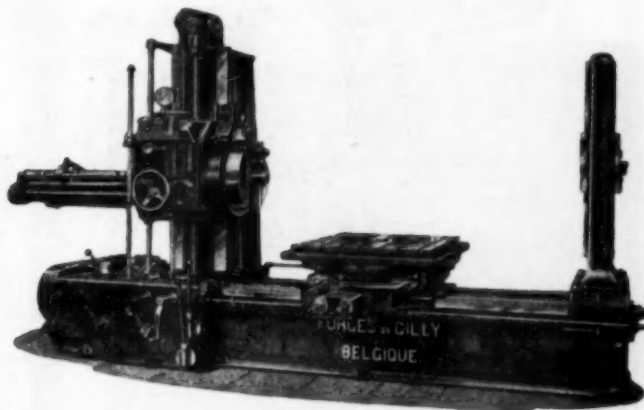
Necessity is the mother of invention, however, and the indefatigable makers once more enthusiastically applied themselves to the task, the outcome being the small Pocket Clock Type Gauge. This second production, unfortunately, did not prove itself the answer to the manufacturers' and motorists' prayers as it inherited the damning setback of its predecessor—a wide range of tolerance that certainly did not by any means earn it a reputation for reliable readings.

WE GUARANTEE

*to deliver this machine
within 5 months*

HORIZONTAL BORERS

These high-grade precision machines are manufactured at the famous Forges de Gilly factory in Belgium. They represent the finest European manufacturing skills, and will give a lifetime of magnificent service. Available in 2½ in., 3½ in., 4 in., 5½ in. and 6½ in. traversing spindle.



Qualos

One 3½ in. machine is available for immediate delivery.

SALES PTY. LTD.

89-101 Lothian Street
North Melbourne

Q5-22-HP



**HOW To BEAT
The HEAT
of HEAVY
Grinding**

Achieve finer finishes from best quality
Abrasive Papers, Cloths, Belts, etc.

ELIZATINSLEY
PTY LTD

640-652 Bourke Street, Melbourne.
MU 6531 (6 lines)
465 Kent Street, Sydney. M 4858

with
**"DUREXITE"
FIBRE
COMBINATION
DISCS**



SECURE Cooler grinding results with "Durexite" Fibre Combination Discs—rugged abrasives that stand curved as well as flat surfaces without chatter.

Designed to eliminate scorched surfaces on metal or other surfaces. Cutting grains kept free from loading of paint, metal, etc.

AND Lower Costs!

A full range of "DUREX"
Abrasives available.





FIGURE NO 61

**JOHN "SUPER" (L.S.)
GLOBE VALVE**

For Saturated STEAM
250 lbs. per sq. inch.
and WATER, OIL or AIR
160 lbs. per sq. inch.

JOHN

M.B. JOHN LIMITED
BALLARAT • VICTORIA
AUSTRALIA

TRADE  MARK

MAKERS OF THE LARGEST RANGE OF
VALVES AND FITTINGS IN AUSTRALIA

ILLUSTRATED above is
one of the large range
of JOHN Valves and
Fittings for use with
STEAM, WATER, OIL,
CHEMICAL, AIR and
GAS Services of high,
medium or low pressures
and temperatures.

FULL PARTICULARS
supplied on request

G.W. Lift Head

Handy Transport in Confined Spaces

The present age may well be called the era of mechanical handling. With fork-lifts, electric locomotives, mechanical conveyors and various power-operated and hydraulic lift trucks, the large factory or storeroom has an enormous range of equipment from which to choose.

But with all the benefits which accrue from rapid and easy stacking and off-loading and removal of goods by mechanical means, the need has often arisen for a hand-operated unit of smaller dimensions. For use in the factory or workshop of restricted size—or in departments of large concerns where space is at a premium—the G.W. Lift Head possesses a number of advantages, not the least of which is its remarkably low initial cost.

Perhaps the most noticeable feature of the G.W. Lift Head and Platform Trolley, however, is the ease with which it permits heavy and bulky objects to be handled in confined spaces. Designed for

loads of up to one ton, it will operate quickly and easily in passageways—in and out of wagons or lorries—up ramps, and over rough surfaces.

Simply and strongly constructed in two parts, as it is, the addition of extra Platform Trolleys adds greatly to the flexibility of the unit, while the extreme ease with which the Lift Head is coupled to the Platform Trolley is an important factor.

The Lift Head is merely pushed under the loaded Platform (being centred under the pin of the platform by a guide fitted to the head for this purpose), when a single downward stroke of the handle converts the unit into a mobile truck, with a particularly short turning circle.

When the load is transported to its required destination, a further downward stroke of the handle and the concurrent release of the trigger (situated conveniently close to the handle grip), allows the

load to be lowered without jarring as the handle regains the upright position.

When in use, loads may be pushed or pulled with the handle in any position and when coupled

it will remain in an upright position with the load on the Head.

When not in use, the unit stands as illustrated with the handle in an upright position allowing it to be stored in a very small space in-



E. T. BROWN LTD., Brownbuilt Steel Equipment Co. (Regd.)
14-24 Alexandra Parade, Clifton Hill, Victoria
17 Castlereagh Street, Sydney, N.S.W.
Representatives in all other States
MANUFACTURING AT SYDNEY & MELBOURNE



G. W. Lift Head and Platform Trolley.



20TH CENTURY Mechanical Exhibition

OF ALLIED TRADES

EXHIBITION BUILDINGS, MELBOURNE

from 12th October to 21st October, 1950

This exhibition will afford a unique opportunity to place your products before the buying public. Already many applications have been received.

For further particulars re Exhibit Space, contact

THE SECRETARY, 20th CENTURY MECHANICAL EXHIBITION

1st Floor, Melville House, 52 Collins Street, Melbourne

'Phone: Central 3402 (After Hours: JU 1527)

deed. Lifting or lowering motions require little effort, while the provision of a safety trigger release ensures that the load cannot become accidentally disengaged without first releasing the trigger.

The G.W. Trolley Platforms are constructed of specially strengthened timber decks securely bolted and screwed to a fabricated welded mild steel front leg assembly with

two heavy duty 8in. diameter rigid castors with ball bearing hubs at the rear. Their height from the floor is 11in. at the rear while the front stands 9in. when in the lowered position. They may be obtained with rubber-tired or cast iron wheels in a number of sizes.

Gardner Waern & Co. Pty. Ltd., of Melbourne and Sydney, are the patentees and manufacturers.

"Perfect Frying Pan"

Claimed by S.A. Maker

Engineering and the metal industries have their small as well as their larger triumphs, and sometimes the smaller ones mean a lot more to a far bigger number of people than do the more spectacular and complex achievements.

As a case in point, it may be noted that Castalloy Ltd., of Waymouth Street, Adelaide, whose products are distributed by Neville Collins Ltd., of 154 North Terrace, Adelaide, claim to have evolved the perfect frying pan. It is described as being made from featherweight Hiduminium alloys and is guaranteed never to warp. The warping of frying pans is, of course, a familiar but always vexatious kitchen incident.

The makers point out that this new type of frying pan is ideal for use on electrical as well as gas

stoves because it will always sit perfectly flat on the plate or element.

Specifications include 10 1/2 in. diameter, 2 in. deep; over 1/2 in. thick special light Castalloy pan; pan heats quickly and evenly—holds heat well; non-inflammable heat resisting tubular, plastic handle; handle butt is part of pan—no joints to collect grease; highly polished, easy to clean; will not buckle on any stove.

Castalloy Ltd. have already given widespread favourable repute of their Castalloy pressure cooker which has an exclusive feature, the Castalloy extension, which increases the capacity from the 10 pints held by the cooker itself to a total of 16 pints. Two courses can be cooked at the one time without any intermingling of the flavours of the simultaneously-cooked foods.

MAGNETOMETER IN SEARCH FOR AUSTRALIAN MINERALS.

The magnetometer, which was a top secret device during World War II, is to be used in an aerial search for Australian minerals. Announcing this fact recently, the Minister for National Development, Mr. Casey, said he hopes the device may help in the development of Australia. "Since the authorities removed the magnetometer from the secret list," he added, "it has been used

extensively for mineral searches in the United States, Canada, Alaska, and South Africa. It has also been used to search for oil under shallow waters around the Bahamas." The investigations, which are to commence within the next few months, will cover wide areas of the continent.

The magnetometer, it will be recalled, was used by Britain and the United States during the war to detect submarines. Its peacetime use should be equally beneficial to the nations.

Aero lift

**INDUSTRIAL
FORK LIFT TRUCKS**

Up to 1 ton Loads, 9 ft 6 in. Lifts.

**FOR SPECIFICATIONS, INSPECTION, DEMONSTRATION,
CONTACT YOUR STATE DISTRIBUTOR**

N.S.W.: Frank J. Hodgson Pty. Ltd., 35-41 Reynolds St., Balmain. (WB 2443).

QLD.: Messrs. Alfred Snashall, Anson Pty. Ltd., 74-76 Eagle St. Brisbane, B.I. (B 3728).

W.A.: Messrs. Wignores Ltd., 613 Wellington St. Perth. (BA228)

S.A.: Power Plant Ltd., 100 Currie St., Adelaide. (Cent. 6633)

Sole Australian Representatives:
LIBERTY MOTORS (AUST.) PTY. LTD.
Materials Handling Division: 131-7 Lonsdale Street, Melbourne (JM 1993)



YOU WANT TO KNOW . . . and the editors will gladly tell you . . . more about the inventions, materials, and processes mentioned on this page. Write to Box 1687, G.P.O., SYDNEY, enclosing a stamped, self-addressed envelope.

Automatic Brazing Machine Triples Production

Production costs frequently can be reduced by constructing relatively simple, inexpensive special devices which make manufacturing operations easy to perform at higher rates than previously were possible. A good example is the continuous automatic brazing machine recently developed for joining copper tubes of water-heater elements to brass mounting plates. With this machine, one operator now brazes 120 elements per hour, where formerly 45 were produced per man-hour with hand-torch methods.

The brazing machine consists of a 48-in. dia. rotating table on which are mounted 24 work locating and holding fixtures. Adjustable-speed drive provides range of 6 to 30 i.p.m. travel through heating compartment. Operating speed is dependent on type of heater being brazed, and can be adjusted quickly by the operator.

Premixed natural gas provides brazing heat. The gas is fed into a venturi with 14-p.s.i. air pressure. The mixture then goes into two 1½-in. dia. pipe manifolds mounted inside an asbestos-walled compartment and equipped with

36 equally spaced 1-in. dia. stainless steel burners. Volume of flame can be adjusted by raising



Gas-fired automatic brazing machine increases production of electric water heater elements almost three times over hand brazing. Four different sizes can be handled on 24 interchangeable fixtures. Table speed and brazing temperature can be varied by operator to suit conditions.

or lowering pressure of air admitted into the venturi. Fumes and excess heat are drawn from

asbestos hood by a small fan and exhausted through a stack to prevent their escape into the shop.

Special fixtures which accommodate the four sizes of heaters, with straight or curved tubing, are interchangeably mounted on fix-

proper relation with the 4-in. dia. 1-in. thick brass mounting plates to which they are to be joined. A preformed ring of 0.047-in. dia. silver solder wire is placed on each end of the tubing to be brazed into the plates. Flux then is applied to the tube ends, attention being given that it is confined to the proper area. If the flux then is permitted to dry, it aids in holding the solder ring on the tube while it is being loaded into the plate. This assembly is placed on locating pins in the fixture, and the heater tubes are held upright by the vertical rod and grooved plate which is an integral part of each fixture. One operator loads and unloads the heater assemblies as the rotating table carries the fixtures past his working position. (2509).

Tangential Chaser is Convenient

The double-wheel bench grinder here illustrated has recently been introduced, for the accurate grinding of tangential chasers. It is designed to meet the need for a simple machine, always set up ready for immediate use, which

ture supports equally spaced around the steel table top, and locate and hold the tubes in

MARTIN WILSON BROS. PTY. LTD. 200-214 MARY STREET, BRISBANE

Queensland Distributors:

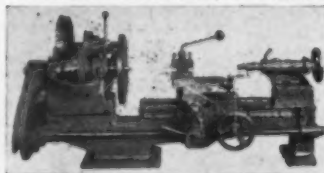
BLACK & DECKER (Aust.) Pty. Ltd., Portable Electric Tools.
TECALEMIT (Aust.) Pty. Ltd., Industrial Lubrication Equipment.
"MINTEX" BRAKE & CLUTCH LININGS, for all Industrial Purposes. "SERVEX" EQUIPMENT.
HARRINGTON INDUSTRIAL PISTON RINGS (up to 42in.).

Stockists:

"Herbrand" and other Engineers' hand tools, etc.

*We are open to represent other factories as
Merchant Distributors*

"REXMAN" PRECISION BUILT 4½ INCH. BACK-GEARED, SCREW-CUTTING



BENCH LATHES

H. R. GOFF PTY. LTD.

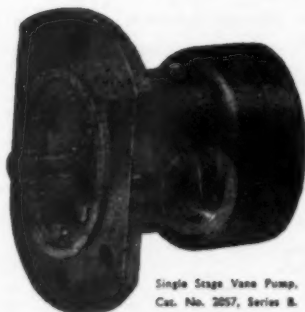
328 Flinders Street
MELBOURNE
Phone: MU 1902

Wingello House, Angel Place
SYDNEY
Phone: BL 2139



OIL HYDRAULIC EQUIPMENT

Rotary Vane pumps



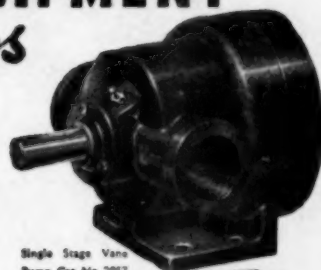
Single Stage Vane Pump.
Cat. No. 2057, Series B.

The compact, reliable and economical pressure source for oil hydraulic control systems.

Balanced hydraulic feature of this pump entirely eliminates radial load on the shaft bearings, resulting in a long trouble free life.

For working pressures up to 1,000 lbs. per square inch. Delivery capacities 5 to 25 g.p.m.
Suitable for direct coupling to 1400 R.P.M.
Electric motors — fixed displacement.

APPLICATIONS : • Hydraulic press actuation.
• Machine tool actuation. • Hydraulic control systems for furnace doors, bulkhead doors and other heavy moving units. • Earth moving equipment actuation. • Fork lift truck control.



Single Stage Vane Pump, Cat. No. 2057 Series A.



Sectional View Single Stage Vane Pump, Cat. No. 2057, Series A.

Complete specifications and data sheets will be forwarded upon request.

INDUSTRIAL SERVICE ENGINEERS PTY. LTD

ASHLEY STREET, BRAYBROOK, VICTORIA, AUSTRALIA

can be located near the actual production machine, thus obviating the inefficient and uneconomical practice, frequently adopted, of grinding this type of thread chaser by hand as a means of saving time instead of sending it to the toolroom.

The 1-h.p. motor runs at 2,800 r.p.m., and carries at one end of the spindle a 6-in. diameter by 2-in. wide cup wheel, and at the other end a 6-in. diameter by 1/2-

necessary is to place the dulled chaser in the clamp and pass it across the face of the cup wheel, an operation which takes only a few seconds.

The plain grinding wheel at the left-hand end of the spindle can be used for squaring off chasers, if required, prior to regrinding the angles. [2512].

higher rate of feed for the roughing operation and continues for a predetermined number of passes. It then changes to a lower rate of feed for finishing and completes the cycle. If desired, the selector can be set to maintain a constant saddle-speed. A selector switch is also provided to control the direction of saddle feed with relation to the rotation

96in. Gear Shaving Machine Handles Easily

Operating on the rotary crossed-axis principle, the gear shaving machine illustrated is capable of handling gears with pitch diameters from 24 in. to 96 in. and of 1 D.P. Maximum length accommodated between headstock and tailstock centres is 125 in.

The work gear shaft is supported by journal bearings in two movable pedestals and driven by the headstock spindle through a flexible coupling. Both pedestals are adjustable in line with the work gear shaft and also at right angles. A standard rack with keyway provided is in the bed to move and guide the pedestals, which can be arranged with interchangeable bearing blocks to suit a number of journal sizes.

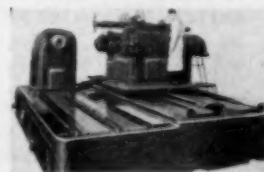
Checking facilities have been embodied in the design of the machine. A journal alignment checker is mounted between the cutterhead slide and the checking headslide, and can be controlled from either side of the saddle. It is a hand-operated slide carrying an adjustable compound slide which is used for setting the dial

indicators. The device is used for checking the alignment of work gear journal bearing in both the vertical and horizontal planes.

With the work driving the cutter, the saddle reciprocates the cutter across the face of the gear. At the end of each stroke there is a reversal of drive, and the cutter is fed one step further into the work. At the end of a predetermined number of strokes the machine stops automatically.

A control station is provided on each side of the saddle, which is guided on the hardened and ground ways of the bed. Saddle is a self-contained unit driven by an independent two-speed reversing motor housed in a fully accessible compartment. Pressure lubrication is provided by a gear pump, while a separate constant level oiling device is fitted to lubricate the leadscrew.

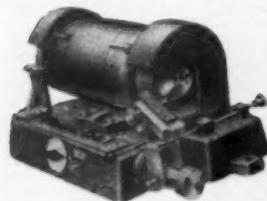
Rapid traverse of the saddle in either direction is selected by push-buttons. A selector switch provides for several conditions of operation. During automatic operation the saddle starts at a



Capable of handling gears up to 96 in. in diameter, this gear shaver has been designed for ease of handling the work, setting-up, control of the work cycle and the precision inspection of the work while still on the machine.

of the workspindle. Signal lights are fitted to indicate the direction of saddle feed.

The cutterhead slide is carried in hardened and ground ways on one side of the saddle top. This is also a self-contained unit, with an automatic cutter in-feed motor and in-feed control. The crossed axes setting of the cutter to the desired vernier reading is made with the aid of a crank.



Tangential Chaser Grinder.

in. wide plain peripheral wheel.

The fixture at the cup-wheel end will take any type of tangential chaser and is adjustable to permit grinding of both the rake and cutting angle. The feed or cut is applied by operation of a knurled-head screw, and adjustable stops are fitted. Provided that the chasers are to be sharpened only, and used on the same material as formerly, no resetting of the fixture is required. All that is



Fullers' Earth

True **Fullers' Earth** from the clay mineral montmorillonite is offered in many grades by **The Fullers' Earth Union Ltd.**, of Surrey, England.

For instance, **237** is the general purpose activated earth suited for the reclaiming or refining of all mineral oils from conventional grades to high quality aero-engine oils. It is also equally suited to the treatment of tallow, fats and vegetable oils.

For special bleaching problems, grades such as **MRC, MQC, KN11C**, or **Fulmonts 500, 511, 525, 700, 711** and **725** ensure the surmounting of your difficulties. These earths are available in both coarse and fine grades.

Fulbent is used in oil-well drilling mud, insecticides, water paints, polishes and pastes, ceramic glazes, tar and bitumen emulsions, and also for bonding a wide range of materials.

Fulbond, in five different grades, is available for improvement of foundry sands.

Full technical information is available from

SWIFT
AND COMPANY LIMITED

26-30 CLARENCE ST., SYDNEY. BX1031

And at Melbourne, Brisbane, Adelaide and Perth. Also Wellington and Auckland, New Zealand.

BRASS RODS & TUBES

We carry a comprehensive range of brass rods and tubes in all sizes and will value your enquiries.

WRIGHT AND COMPANY

For Better Metal Service

81 CLARENCE STREET, SYDNEY

Phone: BX 1211 (6 lines)

Spindle is mounted in precision anti-friction bearings. A lever is provided to impart a slight rotation to the cutter and facilitate engagement with the work.

A single lever control engages the automatic cutter in-feed as well as selecting the desired feed increment. Jog buttons which give slight rotation to the work in either direction are also provided.

The headstock forms another self-contained unit with the motor mounted in a readily accessible compartment. Various speeds can be obtained by means of change gears.

On the side of the saddle opposite the cutterhead slide is the checking head. This is adjustable laterally by a hand-wheel, and may also be swivelled on its trunnion bearing. Two gauging pins are mounted on the front of the slide, the distance between them being any convenient multiple of the linear pitch of

the work gear. The head is then moved forward to engage the teeth, and any errors in the helix angle will be shown on a dial indicator. By checking several points, helix angle, wobble and pitch-line run-out can be read from the indicators.

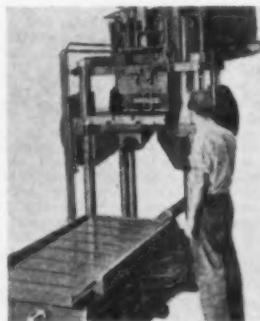
Coolant pump and motor unit is located at one end of the front base section and accessible by means of a double door. Reservoir capacity is 70 gallons, and a series of baffles are provided in the return circuit to trap small chips. Safety floorplate and grating is fitted on both base sections. A coolant splash guard fitted with rollers running on a track on the front base can readily be moved out of the way for loading the work.

Cutters of 7 in., 9 in., or 12 in. dia. can be fitted to this machine, which has a maximum shaving stroke of 11 in. Overall dimensions are 240 in. by 190 in. by 110 in. and nett weight 50 tons. [2508].

Matching Parting Lines on Dies

Elimination of expensive and dangerous efforts by die-making teams to match parting lines on

die are clamped to the two machine platens. The bottom platen moves down and then out horizontally. The die is then sufficiently elevated and exposed to provide ample accessibility for working. It may be quickly moved in and up, in perfect alignment for checking. Dies tested on this equipment may be sent to the casting room without fear of subsequent flash. Specifications include: overall height, width, and length of 112, 68, and 136 in., respectively; locking pressure, 50 tons; die table size, 28 by 58 in.; machine weight about 15,000 lb.; and power supplied by a 10-h.p. motor. [2483].



New Die Testing Machine.

dies is the major objective of a new die-testing machine.

In operation, two halves of the

Mill for Paste Type Food Products

Of interest to manufacturers of paste type food products are the newly improved versions of paste mills now in production. These

(Turn to page 26.)

G. & H. WORM GEAR SPEED REDUCERS

W.R.U. Type

Gregory & Hickey Pty. Ltd. have developed the W.R.U. fan-cooled splash lubricated worm-gear Reduction Unit for economical and efficient transmission needs of every industry. Speed reductions approximately 5 to 1 up to 60 to 1 are obtainable.

The Worm and Wheel are housed in a strong cast-iron casing of neat design, which affords rigid support to the gears and bearings, and also forms an oil bath giving adequate lubrication. The unit is constructed to withstand the usual overloads, and the shafts and bearings are designed for overhanging loads. The bearings can be interchanged to give any desired arrangement of output shaft. The system of ribbing adopted on the casing ensures rigidity, as well as providing for dissipation of heat. The joints are oil tight and the various holes are bored and drilled in jigs, ensuring accuracy and interchangeability.

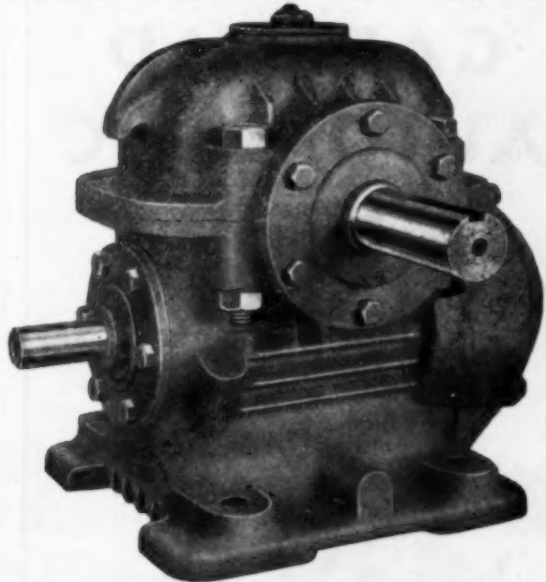
FEATURES:

1. Is compact and requires very little floor space.
2. Requires no attention other than occasional checking of the oil level.
3. Runs with the highest efficiency and ensures a positive transmission.
4. Silent and clean in operation.
5. Not affected by dirt or dust externally.

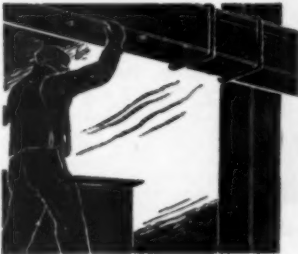
GREGORY & HICKEY PTY. LTD.

49 GREEK STREET, GLEBE, N.S.W.

Phone: MW 2128



Gear Specialists with facilities for handling any gear reducer problem, also Single Helical and Straight Tooth Spurs, Worm Gears, Bevel Gears, etc.



Steel

THOUSANDS
OF TONS

Continuous Regular Shipments

10 GAUGE TO 28 GAUGE SHEETS (Black or Enamelling)

ALSO DEEP DRAWING C.R.C.A.

Quantities of 10 tons or over are delivered ex-ships at capital cities.

British Standard Specifications apply and inspection certificates are available with each shipment.

Prices are reasonable.

Steel of the finest quality for almost universal application is available in continuous regular shipments. We can quote all sizes of Reinforcing Rods, Flats, Rounds, Angles, Channels, Plates, Steel Tubing, R.S.J.'s, Galvanised Iron Sheets, Water and Gas Pipes, Wire Netting, Conduit and Wire of all kinds. Available in True British Dimensions.

EMM. YANNOULATOS (OVERSEAS) PTY. LTD.

28 Martin Place, Sydney

Telephones: BW 2941-2-3

Telegrams: "YANNOULATOS," Sydney

GARFIELD AUTOMATIC NUT TAPPERS



No. 0

Auto. Tapper

Capacity $\frac{1}{8}$ " - $\frac{3}{16}$ "

Production
(approx.)

$\frac{1}{8}$ " 4,900 Per Hour
 $\frac{3}{16}$ " 4,000 Per Hour

No. 1

Auto. Tapper

Capacity $\frac{3}{16}$ " - $\frac{1}{2}$ "

Production
(approx.)

$\frac{3}{16}$ " 3,000 Per Hour
 $\frac{1}{2}$ " 2,600 Per Hour

Manufactured by
GEO. H. ALEXANDER MACHINERY LTD.
BIRMINGHAM, ENGLAND

Factory Representatives for Australia and New Zealand

LEO ROGALY AND LEWIS

PTY. LIMITED

119-123 YORK ST., SYDNEY

Telephone: BX 4855

Telegrams: "ALEWIS," Sydney

IF—your manufacturing schedule calls for a plastic moulding to close tolerances, in any colour, and, above all, in strictest confidence, consult without delay

CASOLIN PTY., LTD.

632 Botany Road

ALEXANDRIA, N.S.W.

'Phones: MU 3051-2-3

CUSTOM MOULDERS IN ALL THERMOPLASTICS

(Continued from page 26)

have been standardised in two sizes, one suitable for laboratory work and small scale production, and the other comprising a works production unit.

The new units, finished in off-white stove enamel, incorporate many advantages in their construction and use. Material can come into contact only with stainless steel surfaces; tools and

which give rise to waste; an even larger number employs vast quantities of nuts, bolts, washers, nails, tacks, wire, staples and so on, some of which inadvertently fall on the factory floor.

This material, both waste and useful, is left as it is, represents an actual financial loss and a potential source of injury to workers. To overcome this double threat to efficiency, numerous collecting schemes have been tried, from picking up by hand to suction cleaners. Manual methods are slow and wasteful of manpower, and machines are frequently damaged by the sharp edges or the weight of the material for collection. Furthermore, the electric cables used with suction equipment constitute an additional safety hazard.

The problem has now been solved by a British firm, through a novel approach. Iron and steel—by far the two most important industrial metals—are normally magnetic, and will thus be attracted to a magnet. This fact has been embodied in the company's floor cleaner. Basically, it consists of a cylindrical magnetised roller, with a traction device. As the roller advances, magnetic forces attract to it the refuse, which is automatically deposited into an easily removable container. Various sizes are available: the smallest can be operated by one unskilled worker; the largest needs a car or tractor to tow it. In neither case is electricity required; in both cases maintenance requirements are negligible. [2500].



Works production paste mill unit.

feeler gauges are unnecessary for setting the working clearance, which is indicated by a setting scale on the exterior of the machine, and it is impossible for the working surfaces to come into contact and thus damage the working parts. Interchangeability of all parts is also an important development. [2421].

Magnetic Collection of Metal Waste

Applied physics has solved a two-sided industrial problem. A very large number of industries utilise processes such as turning, sheet metal working, etc.,

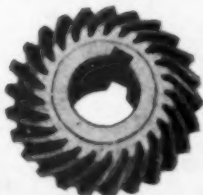
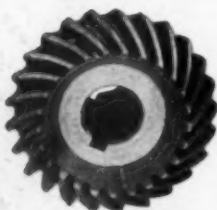
FINE GREY IRON CASTINGS

OF EVERY DESCRIPTION.

**AIR COMPRESSOR, MARINE
AUTOMOBILE CASTINGS**

TAYLOR & WEARING,

UNION FOUNDRY
GEORGE ST. ROAD, N.S.W.
EST. 1899 TEL. 433 318



HAVING TROUBLE WITH BEVEL GEARS? THEN CHANGE TO SPIRAL BEVELS

Only SPIRALS have these advantages:

- As many as 5 teeth always in mesh, giving smooth, quiet action, and also
- reduces working load on tooth.
- Localised tooth bearing, allowing greater tolerance in assembly.
- Curved teeth keep lubricants between mating surfaces.
- The 20° long-addendum tooth form prevents interference when the pinion has as few as 6 teeth.

Capacity for SPUR and CLUSTER GEARS to 8in. diam. done by the FELLOWS METHOD.

REMEMBER! These gears actually COST NO MORE than straight bevels.

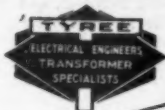
RANGE: $\frac{1}{8}$ in. to 3 $\frac{1}{2}$ in. diam. 12 D.P. to 50 D.P. 12-teeth pinions to 100-teeth crown wheels.

G. L. SHERATON

MANUFACTURING AND GENERAL ENGINEER.

**445 HEIDELBERG ROAD,
FAIRFIELD, N.20, VICTORIA**

TELEPHONE: JW 4752.



MANUFACTURERS

Whether Your Product is a

- SEALED UNIT REFRIGERATOR
- DISH OR CLOTHES WASHING MACHINE
- MACHINE TOOL
- CIRCULATING OR EXHAUST FAN
- PUMP, Etc.

TYREE

Can Supply the Motor Ready to Bolt into Operating Position

Available in a comprehensive range up to 1 H.P. Split Phase and 1 to 1 H.P. Three Phase, also Capacitor Start Types.

We also specialise in the manufacture of lamination dies and the supply of laminations of all types.

Avail yourself, entirely without obligation, of the services of our sales and engineering staffs, to advise on your particular requirements.



Representatives in all States:
**F. W. GREEN & CO.
PTY. LTD.**

TYREE PRODUCTS ARE COMPLETELY MANUFACTURED IN AUSTRALIA BY

TYREE ELECTRICAL CO.

66 PARRAMATTA RD., CAMPERDOWN, N.S.W.
Telephone: LA 4257-8-9

We are Specialists in the Field of
CUSTOM BUILT MOTORS

Don't waste time and money adapting that conventionally designed motor to suit your own special application.



Behind this modest facade in Parramatta Road, Camperdown, N.S.W., F.R.S. Ideal Spring Co. Ltd. are maintaining peak output of a fine range of springs and spring units.



The company's production in N.S.W. is under the control of General Manager W. A. Cartwright (left) and Sydney Manager, F. W. H. Stevenson.

Ideal Springs

Accurate spring action is keynote of comfortable living and mechanical efficiency

There are many reasons why the average manufacturer should be interested in how springs are made and who makes them. The mattress he sleeps on is probably an "innerspring." The upholstery of the furniture in his home is based on coil springs. The car he drives has seats and backrests similarly sprung. And if because of parking difficulties he travels to and from the factory by train, he strap-hangs while other passengers enjoy the comfort of scientifically sprung seats, backrests and even headrests. Among the problems which await him at the factory there are bound to be some concerned with the incorporation of a spring, or springs of various types, in his products; the design of a new spring; or the regular supply of springs.

There is a distinct likelihood that many of these springs—those he sleeps on, those he lounges on, those he travels on, and those he uses in his own manufactures—are the products of an enterprising Australian company called F.R.S. Ideal Spring Co. Ltd.

THE F.R.S. story, which we learned during a visit to the company's head office and factory at Camperdown, N.S.W., can be said to have started during 1914 in South Australia. For it was then that F. R. Stevenson, an employee of the already flourishing body building organisation of Holden's in Adelaide, invented a spring grip, a cross-shaped piece of metal for holding an individual coil spring in place in upholstery. In that year he founded the F.R.S. Spring Grip Company and commenced manufacture.

The founder recognised the chance offered by the motor body building industry then beginning to boom in South Australia, and for the first few years of development the company confined its activities to Adelaide, manufacturing motor car cushions, incorporating the

patent spring grip, for the Holden organisation. Springs for these units were imported until, in the year 1918, the company installed spring winders to cope with this phase of manufacture.

Four years later a Sydney branch office and factory was opened at the present address, 145-152 Parramatta Road, Camperdown. The new branch also undertook the manufacture of motor cushions, helping to meet the demand for these units which had increased considerably; the company, indeed, was to expand with this demand until, by 1928, it was supplying Holdens with seats and backs for as many as 750 bodies a week.

Following the opening of the Sydney factory, the next major development for the company occurred in 1925 when it was decided to take up the manufacture of mat-

tress units. A high standard was set for materials and workmanship, and the units were immediately successful. At a subsequent All Australia Exhibition the new F.R.S. spiral spring mattress was awarded a gold medal and was highly commended by the judges.

In 1926 the organisation became F.R.S. Ideal Spring Co. Ltd. The main factory and Head Office were still in Adelaide; they remained there until 1934, the beginning of a period of important reorganisation for the firm. During that period the Adelaide factory and office closed down. In the same year an assembly plant was started at Arden Street, North Melbourne, to be superseded within a few months by a factory (11,000 sq. ft.) at 44 Oxford Street, Collingwood.

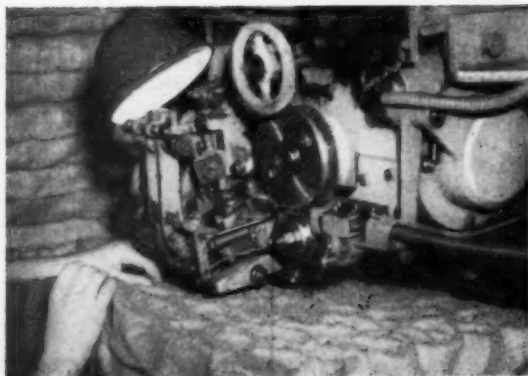
Since that period the Head Of-

fice and main factory of the company have been in the 19,000 sq. ft. Sydney premises, and the branch at Collingwood, Victoria.

Throughout all the reorganisation the company had continued the expansion of their facilities for the manufacture of springs of various sizes and shapes for many purposes.

Company production to-day is well established in two important fields—all types of tension, compression and torsion springs, and spring washers, for engineering and other industrial purposes, and upholstery springs and spring units for mattresses, lounge cushions and similar furnishings.

We were given an outline of the company's present activities by Mr. W. A. Cartwright, who is General Manager. With a background of practical engineering ex-



This clipping machine, of Swiss manufacture, is one of several at F.R.S. It is designed for clipping together with wire the end loops of adjacent springs as they stand together to form a spring unit. Of particular interest is the fact that these machines, intended by the makers for the clipping together of individually encased springs and supposedly limited to that function, have been cleverly adapted by F.R.S. technicians to accommodate spring units of unlimited size encased in a single envelope.

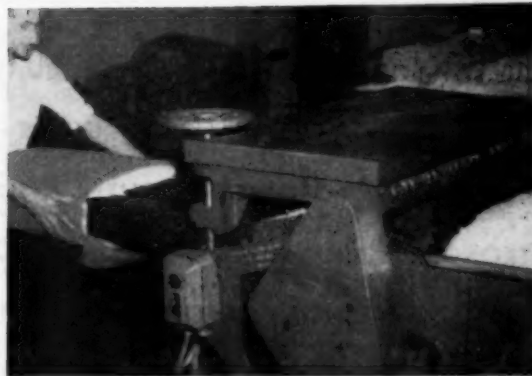
perience, he has a vigorous enthusiasm for the job which augurs well for the future of the organisation.

Said Mr. Cartwright: "It is well known, of course, that springs fall into three categories. There are Compression Springs, used to furnish a resistance against a compressor force, and wound in a greater or less space between adjacent coils; Tension Springs used to furnish a resistance to an extending or pulling force, and usually wound close or with the coils touching each other; and Torsion Springs, which cover a large range of various sizes and shapes and

whose general function is to resist a force in a circular direction.

"Facilities are available for production on our machines of large quantities of these springs, of wire from approximately 5 gauge to 28 gauge.

"In general, the heaviest spring which our manufacturing facilities at present permit is $\frac{1}{2}$ in. annealed wire. Within this capacity range, however, there is literally no limit to the shape of springs which we can offer to manufacturers. Springs with eyes of any shape, or with bent tails, or ground ends—in fact any desired shape or size of spring can be made here to suit customers' requirements.



Lounge cushions are filled on this modern machine. The spring unit, encased in strong hessian, is sandwiched between generous layers of filling material and placed in the deep trough, at right. A cushion cover is placed over the projecting portion of the machine, at left, and is slowly forced off as the "sandwich" of spring unit and filling is compressed by the endless-chain conveying mechanism and ejected into it.

"Particular care is taken in the selection of material, and all tempering is carefully controlled by temperature regulating equipment.

"When it is necessary to manufacture springs in the heaviest gauges from annealed spring material, the closest attention is given to the hardening and the tempering processes, for which modern facilities are available.

"Production at our Collingwood factory, under Mr. G. H. Hodgson, our Melbourne Manager, is exactly the same as production here, except for the manufacture of spring washers."

Methods and equipment here

have been kept abreast of developments in this interesting manufacture. Thus the company is enabled to meet the high standards of quality and uniformity, finding their reward in a steadily increasing demand for their springs and patent spring units.

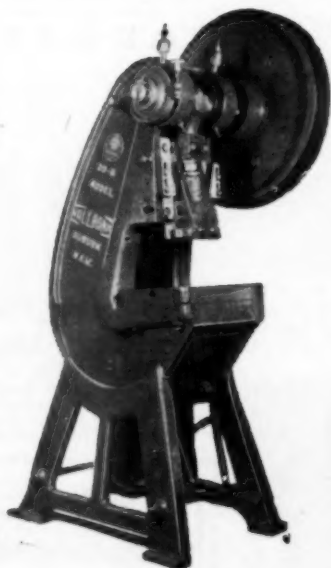
New upholstery spring coilers and new upholstery spring knotting machines were met with at the outset of our subsequent tour of the factory under the guidance of Mr. F. W. H. Stevenson, son of the founder and now Sydney Manager for the firm. They are visible evidence of the marked progression which is a feature here, and, we were informed, will



Knotting the free ends of upholstery springs is effected in a simple operation on these modern knotting machines, newly installed in this progressive factory to eliminate the risk of any bottleneck in the flow of springs from the coilers to their ultimate application.



In the foreground are F.R.S. patent spring grips, the modern version of the product on which the original company was founded. Some of the grips can be seen firmly anchoring the bases of springs in the unit under assembly in this picture, interior springing for an automobile seat.



Model Illustrated, 25A.

"WALLBANK" POWER PRESSES

- ♦ Precision Built
- ♦ Heavy-Duty Inclined Cast Body
- ♦ Larger Die Space
- ♦ Early Delivery

DESIGNED AND MANUFACTURED IN THE WORKS AND FOUNDRIES OF

NICHOLSON & WALLBANK

Head Office: 87 Parramatta Road, Auburn, N.S.W. 'Phone: UX 7607.

Branch Office: 8 Nelson Street, Annandale, N.S.W. 'Phone: LA 2437.

INQUIRIES INVITED.

WRITE: 8 NELSON STREET, ANNANDALE, N.S.W.



AJAX-NORTHROP

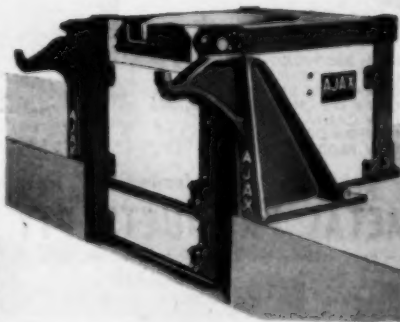
High Frequency INDUCTION MELTING AND HEAT TREATMENT EQUIPMENT

In the important field of High Frequency Induction Melting and Heat Treatment Equipment, Ajax Electrothermic Corporation of Trenton, New Jersey, manufacturers of Ajax-Northrup Furnace equipment, are recognised as world leaders. Ajax-Northrup equipment, available in Australia through the factory representatives, Allmet Industries Pty. Ltd., includes furnaces for steel and non-ferrous melting, forging, upsetting, spinning, annealing, hardening, etc. These furnaces are made in both motor-generator and converter types.

Send us your enquiries and the appropriate Ajax-Northrup bulletin will reach you by return mail

Allmet Industries Pty. Ltd.

P.O. BOX 14, BOTANY, N.S.W. 'Phone: MU 1543



Ajax-Northrup High Frequency Steel Melting Furnace.

F.R.S.
IDEAL SPRING CO. LTD.

**SPRINGS
and SPRING
WASHERS**



F.R.S. IDEAL SPRING CO. LTD.

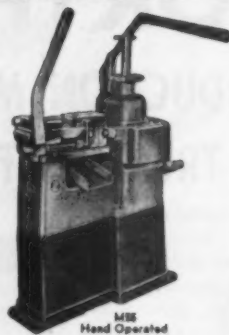
WORKS: Sydney: 148-152 Parramatta Road, Camperdown, LA 2784-5.
Melbourne: 44 Oxford Street, Collingwood, N.5, JA 1115-6.

AGENTS: Queensland: Warren & Strang (Q'land) Ltd., Brisbane.
South Australia: A. A. Markwell & Sons, Adelaide.
Western Australia: A. Parkinson & Co., Perth.



DIECASTERS

**FOR THOSE
SMALL
CASTINGS
6 to 7 oz.
Capacity
Zinc Base
Tin or Lead**



MBA Air Operated



- HIGH PRODUCTION RATE
- LOW MAINTENANCE COST
- OPERATED BY UNSKILLED LABOUR
- QUICK DIE CHANGE AND SET-UP
- LOW CAPITAL COST
- LOW DIE COST
- LOW PRODUCTION COST

MBS
Hand Operated

Manufactured by

METAL PRODUCTS PTY. LTD.

43-59 Sandgate Road, Albion, Brisbane
QUEENSLAND

UNDER LICENSE TO DISCASTING MACHINE TOOLS LTD., LONDON

Distributed by

NEW SOUTH WALES: Demco Machinery Co. Ltd., 243 Cleveland St., Redfern.
VICTORIA: James Forbes & Co., 49 Elizabeth St., Melbourne. WESTERN AUSTRALIA:
McLean Bros. & Rigg Ltd., Murray St., Perth. NEW ZEALAND: J. C. Riddell & Co.,
Box 12, Te Anau, Wellington.

(Continued from page 30.)

who has had a lifetime of experience in this field of manufacture.

The majority of upholstery springs produced here are incorporated in the company's other activity—the production of spiral spring mattresses, motor cushions, and interior spring units for spring filled mattresses, and bodies and cushions of lounge suites.

It is scarcely necessary to remark that from a purely practical standpoint the interior of upholstered furniture is almost more important than those parts which meet the eye. The nature and quality of the interior springing and the various filling materials are of vital importance not only to



One of the new upholstery spring collars with which F.R.S. have boosted their output to meet the demand for their springs and their various patent spring units.

resilience and comfort but also to durability. They make all the difference between chairs and settees which will give lasting comfort and maintain their shape and softness for many years, and furniture which in a relatively short space of time will become hard and lumpy.

Upholstery springs, uniform and correctly tempered, provide a correct foundation for high-grade work. On what's inside depends the durability and comfort of furniture and mattresses.

Photographs accompanying this article show some of the stages of manufacture of F.R.S. upholstery springs and their incorporation in patent spring units.

Several new upholstery spring collars have been installed by the company to boost their output in

(Turn to page 34.)

L. T. KENNETT
Improved Patent, 14685

LADDERS

for
**BUILDERS,
PAINTERS,
and
HOME
USE.**
also
**STEPS,
TRESTLES,
GARDEN
SEATS,
HAND
TRUCKS.**

Illustrated
Booklet
Free on
Request.

**L. T. KENNETT LADDERS
PTY. LTD.**
26, 27, 28 CITY ROAD
DARLINGTON, SYDNEY
Estd. 30 Years. Tel.: MX 3374.

The Machinery
People

Richardson's

281 Latrobe St., Melbourne. MU 2321.

- Engineers' Machine Tools
- Woodworking Machines
- Portable Electric Tools
- Circular and Band Saws

ALL TYPES SAW REPAIRS

**LADDERS, STEPS
and TRESTLES**
of Every Description.
Quality Right—Price
Right.

**Mote Ladders
PTY. LTD.**

Works:
38-44 VICTORIA RD.,
DUMMOYNE.
Phone: WA 2521
CATALOGUE ON
APPLICATION.

**GENERAL
ENGINEERS
AND
SHEET METAL
WORKERS**

B.S.F. PTY. LTD.
9-11 David Street
RICHMOND, E.I., Victoria
Tel.: JA 2084

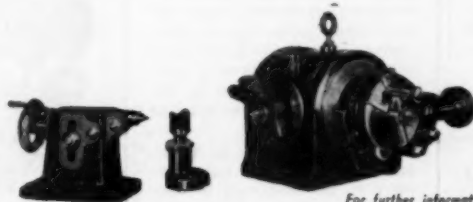
Meehanite metal castings

FOR ACCURACY AND PRECISION

Controlled metal structure and freedom from objectionable internal stresses contribute to maintain accuracy in each casting. High tensile and transverse strengths, a true modulus of elasticity, anti-friction qualities and high vibration damping qualities mean reliability in service and assure positive translation of superior design characteristics into the finished product.

For your casting problems consult the nearest
"MEEHANITE" FOUNDRY

A.C.I. Engineering Pty. Ltd., Waterloo, N.S.W.	Kalgoorlie Engineering & Foundry Pty. Ltd., Kalgoorlie, W.A.
David Duncan, South Melbourne, VIC.	Kalvinator Australia Ltd., Adelaide, S.A.
Enterprise Foundry & Machine Co. Pty. Ltd., Sefton, N.S.W.	Malleable Castings Ltd., Marrickville, N.S.W.
A. Goninan & Co. Ltd., Broadmeadow, N.S.W.	Mars Machine Tool Mfg. Co. Pty. Ltd., Brisbane, Q.
Grimwade Castings Pty. Ltd., Port Melbourne, VIC.	Perry Engineering Co. Ltd., Adelaide, S.A.
Hoskins Engineering & Foundry Pty. Ltd., Perth, W.A.	Russell Allport & Co. Pty. Ltd., Hobart, TAS.
Jeffress Foundries Pty. Ltd., Northgate, Q.	



THE MAJOR CASTINGS IN THE
MACHINE TOOLS SHOWN IN THE
ILLUSTRATIONS ARE "MEEHANITE"
METAL.

For further information write to any of the above or to

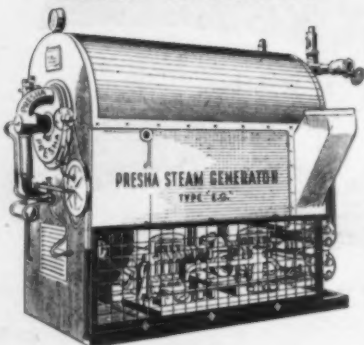
MEEHANITE RESEARCH INSTITUTE OF AUSTRALASIA

P. O. Box 1, Waterloo, N. S. W.

MEB-50

THE MOST MODERN — ECONOMICAL — EFFICIENT —
RELIABLE STEAM GENERATING PLANT. FOLLOW THE
EXAMPLE OF HUNDREDS OF OTHER STEAM USERS.
INSTALL A

"Presha" Automatically Controlled Steam Generator



THE "PRESHA"
(Automatically Controlled Steam Generator)

The original and only "PRESHA" — covered by world patents, hundreds in constant use in Australia and overseas. Large and small steam users, your steam requirements of any capacity supplied — fitted with the "PRESHA" patent automatically controlled modulating fuel oil burner using diesel or bunker fuel oil — a full head of steam in five minutes — efficiency guaranteed 80% — entirely automatic in operation — unlike a steam boiler, there is no danger risk — a "PRESHA" steam generator cannot explode — entirely an Australian invention made in Australia by Australian engineers using all Australian materials and equipment.

Write at once for Illustrated Brochure.

Just a Few of Our Many Recent Orders:

BOVRIL LIMITED, England, 8-100 H.P. Generators, total 800 H.P. for their new works on the Katherine River, North Australia.
THE COMMONWEALTH WHALING COMMISSION, 4-100 H.P. Generators, total 400 H.P., for the Whaling Station, Carnarvon, Western Australia.
THE NATIONAL UNIVERSITY, CANBERRA, 4 Generators.
NUFFIELD ORGANISATION, SYDNEY, 4 Generators.

Ask for a list of users. Get their opinion, there is no better recommendation.
"PRESHA" Steam Generators are manufactured by

PRESHA ENGINEERING CO. PROPRIETARY LIMITED

In their factories in each State of the Commonwealth:

South Melb., Victoria	Sydney	Adelaide	Brisbane	Queensland	Perth
City Road	Botany Road	Gibson St.	Charlotte St.	Wellington St.	
Head Office	Waterloo	Bowden			

Overseas Enquiries Handled by

PRESHA OVERSEAS (Corporation) Pty. Ltd., 1 Bent Street, Sydney.

STOP! HAVE YOU CONSIDERED THIS DURABLE FINISH?

Vitreous Porcelain Enamel

Colorful — Durable — Versatile — Economical

We have capacity available for both Sheet Steel and Cast Iron Enamelling. All enquiries welcome. Work carried out on Jobbing Basis.

PORAMIC ENAMELLING PTY. LTD.

558 FOREST ROAD, BEXLEY, N.S.W. LW 3221.

"SPECIALISTS IN VITREOUS PORCELAIN ENAMELLING"

(Continued from page 32.)

order to meet the demands of furniture upholsterers and of their own unit assembly departments. From these coilers the springs pass to a bank of knotting machines which tie the free ends of the springs in a swift, precise movement. These machines, too, are new; installed in this progressive factory to eliminate the risk of a bottleneck in the flow of springs from the coilers to their ultimate application.

Many things can happen to a finished upholstery spring after heat treatment and japanning at F.R.S. It can be mounted on a cross bar to a steel angle iron frame to form part of a spiral spring mattress, spiral spring wire mattress support, automobile seat or other form of upholstery base. It can be sewn into its own fabric container and form part of an innerpring mattress, or, securely yet resiliently linked to others of its kind, it can be sewn into a stout cover to form the base of comfort in a lounge cushion or in an innerpring mattress of any required size.

In the F.R.S. Spiral Spring Mattresses (Design No. 1000), for example, 120 highly tempered springs are attached to twelve cross bars which in turn are attached to a steel angle iron frame. Every spiral spring is interlocked with F.R.S. patent interlocking wire to keep each of them in perfect position.

The same number of spiral springs are used in one size of the F.R.S. "Easy-rest" Mattress, attached to a full angle iron frame which is welded at each corner. Overhanging springs and the frame are gripped all round to the edge, using patent grips. Ninety-nine sensitive cross springs, joining the main springs at the top, give them flexibility. To prevent side sway two stabilisers are fitted to each side of the bed. On the 4ft. 6in. size a stabiliser is also fitted to each end.

Of particular interest in the department of the F.R.S. factory devoted to the production of units for innerpring mattresses and lounge cushions are a number of clipping machines of Swiss manufacture, designed for clipping together with wire the end loops of adjacent springs to form spring units of various sizes.

These modern machines were intended by the makers for the clipping together of individually

The Finest House in
Australia for
Engravings of Every
Description

The Randle Photo Engraving Co.

PTY. LTD.

Photo. Engravers, Stereotypers,
and Designers

RANDLE HOUSE,
73 FLINDERS STREET,
DARLINGHURST, N.S.W.

Phones: FA 3158-9

HOBSON ENGINEERING CO.

★ REPUTATION
SPECIALISTS ★

301 HENDERSON ROAD,
ALEXANDRIA, N.S.W.

Approved A.I.D. Inspectors.
Capstan and Auto Lathe
Work to 1 1/2 in. capacity.
Thread Rolling, Press Metal
Works, Sheet Metal Works,
Steel Fabrication, Oxy and
Electric Welding.

LA3414 LA1871

"PILOT" 2 H.P. AND
"WING" 3 H.P.
4-CYCLE



Forced Air Cooled
Petrol and Kerosene Engines

R. B. CHURCHLEY PTY. LTD.

Factory Representatives for
all States

175 William Street, Melbourne
Tels.: MU 1517, MU 4577.

FOR
ACID-PROOFING
TANKS — PIPELINES
DRAINS — FLOORS
USE

NONPORITE
Ceramic & Permelastic
Cements

SALES AND SERVICE

Sole N.S.W. Representatives:

McKinlay, Fletcher
Pty. Ltd.

277 CLARENCE STREET
SYDNEY

Telephone: M 2775

CHARLES O'REILLY

(Established 1864)

GENERAL CARRIERS
BOND AND FREE STORES

93-115 MARGARET STREET
BRISBANE

Manufacturers' stocks held and distributed as requested at a nominal overhead charge covering all services. Enquiries solicited.



SOLUBLE
SILICATES

of Soda Potash

True to Specification.

Silicate & Dolomite Co. of Aust.
Pty. Ltd. ALLEN STREET
PYRMONT, N.S.W.

OFFICE MACHINES
AND OFFICE SYSTEMS

FACTORY JOB CLOCKS. Models for up to 10 to 20 employees. £45. Various other models up to £31/10/-.

ACCOUNTING AND BOOKKEEPING MACHINES. Types Statement and Ledger Sheet simultaneously, accumulates Sales and Credit Totals, proves the work and issues up to date Statements at any time. Installing instructions given and necessary system prepared and printed.

INVOICE MACHINES. Types the Invoice and simultaneously adds and accumulates the sales and proves the addition, also adds the sales tax.

OFFICE FURNITURE. Steel Cupboards, Filing Cabinets, Machine Stands, Steel Typists and Office Chairs (18 kinds), Oak Desks (Typists and Executive).

OFFICE MACHINES. Duplicators, Multigraphs, Mimeotype, Adding Machines, Calculators, Typewriters, etc.

LEWIS

Office Machines Co.

Shop, Showroom and Repair Dept.
4 ANGEL PLACE, 1ST PITT STREET.
Phone: BW 6664. 4 Doors from G.P.O.

encased springs, they being apparently limited to that function. F.R.S. technicians, however, have cleverly adapted them to accommodate spring units of any size, clipping together the springs as they stand encased in a single envelope.

The accent is on high quality at F.R.S., and the standards of material and workmanship are going to be maintained in the future.

There will be no resting on laurels for this organisation. Under the keen administration of Mr. W. A. Cartwright, plans are afoot for a new factory (35,000 sq. ft.) at Brunswick, Victoria; existing factory space in Sydney is being gradually re-allocated to improve production flow, already stimulated by the new machinery mentioned above; and the company's production policy will continue to be the immediate adoption of improved plant and methods as they appear.

The comfort, convenience and even essentials of our life depend on spring action. Therefore the accuracy and, above all, the high quality of springs are features of the utmost importance.

Australians, at work and in the home, have been well served in the past with springs for efficient industry and springs for comfortable living.

That important service to Australia will continue in the future enhanced by the invigorated activities of F.R.S. Ideal Spring Co. Ltd.

OUTPUT OF BUILDERS' HARDWARE.

According to the review issued recently by the Commonwealth Division of Industrial Development, the Australian builders' hardware industry, though not working at full capacity is, nevertheless, producing more goods than can be absorbed by the home market. It is stated, in fact, that the industry is producing only two-thirds of capacity on a single shift basis. "If shortages of labour and materials were overcome," the review adds, "the industry could meet a 50 per cent. rise in building activity, as well as other local demands, and provide a surplus for export." Commonwealth regulations, however, permit the export of builders' hardware only on a quota basis. At the same time, moreover, import restrictions in New Zealand and in South Africa have reduced exports to these markets. Obviously, a significant increase in the number of buildings and homes constructed is essential to the full development of this important branch of industry.

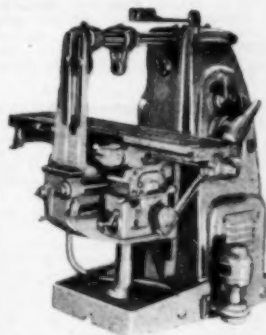


Single or double joint-Sir?

We can offer the unique "W" type Universal Ball Joints in types and sizes to meet most transmission needs. Our representatives are available to assist you whenever the design calls for taking rev's round awkward corners, or where rotating shafts require pliability. The Centre Line no longer enslaves your designer where "W" type joints are incorporated.

E. H. JONES LTD.

Universal Joints are available for early delivery in any quantities



Model 2E (Plain) Milwaukee Milling Machine

The Model 2E was conceived after the most intensive survey of market conditions ever to precede a new Kearney & Trecker-Milwaukee Milling Machine development, and is built to fulfil three prime shop considerations: Efficiency of operation, ease of operation, and economy of operation.

The Model 2E is a new machine tool embodying the fundamental requirements of sound milling machine design—ACCURACY, RIGIDITY and CAPACITY—and is built in keeping with the high standard of workmanship so closely identified with Kearney & Trecker-Milwaukee Machine Tools since 1898.

There's a spot in every shop for a Model 2E.

Sole Australian Agents:

ELECTRONIC INDUSTRIES IMPORTS PTY. LTD.

(Division of Electronic Industries Limited)

666-670 Chapel Street,
South Yarra. BJ 1227.

52 Bowen Street,
Brisbane. B 7161.

147-149 Castlereagh Street,
Sydney. M 6031.

90 Grote Street,
Adelaide. Cent. 1780.

INQUIRIES FOR PLANT MATERIAL AND AGENCIES

"THE AUSTRALASIAN MANUFACTURER'S" INQUIRY DEPARTMENT

This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch with the best sources of supply. **INCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY.** It is essential that telephone inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

SPECIAL NEW INQUIRIES.

WHEN REPLYING to an Inquiry, please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer," 16 Bond Street, Sydney. **INCLUDE A PLAIN, STAMPED ENVELOPE** so that we can forward your reply to the Inquirer.

CHANNEL IRON WANTED: Sydney firm wants to buy approximately 120 ft. of 15 in. x 4 in. Channel Iron. Write to Ref. 8227, c/o "The Australasian Manufacturer."

ROYAL ADELAIDE SHOW, 1950 — SPACE AVAILABLE: An exhibitor of Machine Tools and Engineering equipment has space on their stand for kindred saleable lines and is prepared to co-operate with interested manufacturers. Show dates, September 7th to 16th, day and night, inclusive. Items for display to be in Adelaide no later than September

REDUCTION GEARS (2) WANTED URGENTLY:—200 H.P., 500 R.P.M. (input), Ratio approximately 10:1. Write to Ref. 6577, c/o "The Australasian Manufacturer."

PLASTIC MOULDINGS, DIES AND AUTO. LATHE CAPACITY

Specialists in Electrical and Industrial Mouldings. Prompt service. **MASTERCRAFT PLASTICS** 72 Ferrarville Road, Stansmore, N.S.W. LA 3680, FW 3619.

METAL STAMPING

Capacity up to 15 tons. Die Design and Manufacture. Product Design, Mechanical and Electrical.

JOHN MORRIS ENGINEERING PTY. LTD.

55 Pitt Street, Sydney. BU 1383.

4th. Firms interested in this inquiry are asked to write to Ref. 8228, c/o "The Australasian Manufacturer."

MOTOR CAR HEAD LAMP REFLECTORS: Australian firms manufacturing this type of equipment are requested to write to Ref. 8229, c/o "The Australasian Manufacturer."

WAX PAPER FOR SALE: Melbourne firm has for sale 1,800 reams 12 1/2 in. x 20 1/2 in. plain sulphite heat sealing at 14/- per ream, and 700 reams 15 in. x 22 1/2 in. at 18/6 per ream. Cost insurance and sea freight any Capital City. Write to Ref. 8230, c/o "The Australasian Manufacturer."

AGENCIES WANTED: Established Manufacturers' Representatives recently formed into Proprietary Company offers services to Manufacturers requiring representation in one or more States. Head office in Sydney. Enquiries in confidence to Ref. 8231, c/o "The Australasian Manufacturer."

CLICKING PRESS FOR SALE: Sydney firm has for sale one No. 3 B.U.S.M. Co. Clicking Press, reconditioned as new, table 3 ft. x 1 ft. 6 in., complete with 1 H.P. Motor drive and new fibre platen.

MALLEABLE PIPE FITTINGS WANTED: W.A. firm wants to purchase direct from manufacturers a regular supply of Malleable pipe fittings, 1 in. to 2 in. Write to "Hardware House", hardware merchants and importers, 154 Marine Terrace, Geraldton, W.A.

MANUFACTURERS! W.A. REPRESENTATION: Are your products represented on W.A. Goldfields? Experienced Agents possessing good connections and credentials are seeking to represent Manufacturers of quality products on the Goldfields, particularly the Gold Mining Industry. Apply "Goldfields", c/o "The Australasian Manufacturer", Box 1687, G.P.O., Sydney.

Best offer. Write to Ref. 8232, c/o "The Australasian Manufacturer."

WATERPROOFING CANVAS GOODS: The manufacturer of a preparation called "Dekol" for waterproofing motor car hoods and other canvas goods is requested to write to Ref. 8233, c/o "The Australasian Manufacturer."

BRAN POLLARD AND KEY-MEAL: New South Wales firm desires to contact organizations who can supply them with bran, pollard and keymeal to be used in the manufacture of Pig and Poultry Meals. Write to Ref. 8234, c/o "The Australasian Manufacturer."

POWER LOOM WANTED: Melbourne firm wants to purchase a second-hand power loom. Read space between 42 and 56 inches.

STEEL STRIP FOR SALE

Electro-galvanised, 2 in. x .009 in. in 3,000-foot coils approximately 16ft. to the lb. Packed in half-ton cases at £140 per ton, F.O.B. Sydney.

In stock, immediate delivery.

SMITH COPELAND

33 Regent Street, Sydney. M 4181.

Number Wheels & Pinions in Tin Alloy or Plastic

Varied range of standard types covers the requirements for Gas, Electricity and Water Meters as well as Telephone Registers.

H. J. THORMANN Eng. Co. Ltd.
London

Sole Agents for Australia:

A. K. WENKART
66 King Street, Sydney
Phone: BX 2209

ENGINEERING DESIGN AND DETAIL DRAWINGS PREPARED
YOUR IDEAS DEVELOPED
Planweld Engineering Co.
225 Bexley Rd., Earlwood, N.S.W.

ENAMEL COPPER WIRE FOR SALE

35 B & S, 38 B & S, 30 B & S, 34 B & S, 31 B & S, 16 B & S, 12 B & S.

Also 21 B & S Cotton Covered.

Substantial Quantities Available

MOTOR PARTS MFG. CO. PTY. LTD.

30-36 RALPH STREET, ALEXANDRIA, N.S.W.

Oildag
Colloidal Graphite in Oil

Aquadag
Colloidal Graphite in Water



dag
COLLOIDAL GRAPHITE

In Fine Dispersion

"dag" is the Registered Trade Mark of Acheson Colloids Ltd., London. It is your Guarantee of Quality in all types of GENUINE Colloidal Graphite Dispersions. These versatile products are indispensable to modern industry where high temperature or lubrication problems arise. Die Casting, Drop Forging, Metal Drawing, and Extrusion firms are invited to inquire for technical information from:



Sole Agents in Australia:

K. J. SAVAGE



ENGINEERING & INDUSTRIAL SUPPLIES CO.

AUSTRALASIA BUILDING
28 BOND STREET, SYDNEY, N.S.W. Telephone: BU 1307.

CRYSTAL-LAPORTE PTY. LTD.

MANUFACTURERS OF

HYDROGEN PEROXIDE—All Strengths
UREA PEROXIDE 34/35 %

Proudly announce the manufacture for the first time in Australia of . . .

SODIUM PERBORATE

MINIMUM OF 10% ACTIVE OXYGEN

High Purity _____

_____ Light Bulk Density _____

_____ Excellent Stability _____

Samples, Prices and Technical Service from

CRYSTAL-LAPORTE PTY. LTD.

NEW SOUTH WALES:

73 Banksia Street

Botany

MU 1486

VICTORIA:

36 Park Street

Melbourne, S.C.5

MX 1910

Sturdy construction and good condition essential. Write to Ref. 8220, c/o "The Australasian Manufacturer."

WELDED MACHINES—CAPACITY REQUIRED: A large and continuous contract is available to Melbourne engineering firms for the manufacture of welded machinery. Most materials for this work will be supplied. Work involves machining, welding, fitting and spray painting. Write to Ref. 8221, c/o "The Australasian Manufacturer."

MELBOURNE ENGINEERING SHOP — OFFER TO PURCHASE: A Melbourne company with an Australia-wide sales organisation wishes to purchase outright or buy a controlling interest in suitable Engineering Shop, as going concern, to manufacture its products. Capacity required: general machining, assembly and fabricating. Factory is to be equipped with modern machine tools and to have a floor space of not less than 6,000 square feet. Write Ref. 8222, c/o "The Australasian Manufacturer."

CONVEYOR EQUIPMENT, AGENT FOR QUEENSLAND WANTED: N.S.W. engineering supply house with overseas agency for comprehensive range of Conveyor Idlers and Conveyor

equipment, Trippers, Conveyor Drums, Screw Conveyors, Skip Hoists, etc., invite applications from Queensland firms interested in this class of equipment with a view to handling some on sub-agency basis. Write to Ref. 8223, c/o "The Australasian Manufacturer."

AGENCY FOR ENGLISH WIREWARES AVAILABLE: English manufacturer of domestic wire products desires to contact suitable Australian agents. Products are selling in large quantities in overseas markets, including U.S.A., in competition with locally-produced articles. Write to Ref. 8224, c/o "The Australasian Manufacturer."

MILD STEEL PLATE HANDLING EQUIPMENT (SELF-LOCKING DOGS): Tasmanian firm desires to contact suppliers of Mild Steel Plate Handling Equipment. They require a set of self-locking dogs for lifting heavy plates on edge. Write to Ref. 8226, c/o "The Australasian Manufacturer."

HYDRAULIC DRAWING PRESS WANTED: Sydney firm wants to purchase one Hydraulic Drawing Press — Double Action — 400 ton approx. capacity. Approx. platen size, 42 x 51 inches. Daylight, 21 in. Prefer-

GERMAN TRADE PAPERS AVAILABLE

The official trade papers of Western Germany are again represented in Australia

Facilities are now available to subscribe to and advertise in

"HANDELSBLATT"

(in German only)

"INDUSTRIAL GERMANY"

(in English, French, German, Spanish and Portuguese)

"CHEMICAL INDUSTRIES"

72 pages of chemical development in Germany and the whole world (in German)

Australian and New Zealand firms interested in trade and agencies in Western Germany may contact our sole representative for the South Pacific, who will be pleased to discuss all further details.

THE NEW GERMAN INFORMATION BUREAU

WALTER SCHAUBLE, 300 Little Collins Street, Melbourne, C.I

Tels.: Cent. 2827 or WL 2471

Representing

Handelsblatt G.m.b.h., Prosehauf, Düsseldorf (British Zone), Germany

JOHN HEINE

SYDNEY

TECALMIT ONE SHOT
LUBRICATION

PATENTED
EASY ADJUSTING
SAFE LOCKING
CON-ROD CLAMPS

HEAVY X BRACED
HIGH TENSILE
FRAME

INCLINABLE
UP TO 45°

PATENTED ANTI
CLICK CLUTCH DEVICE

NON CUSHION
SERRATED BED

TREADLE
GUARD

MODEL NO 203 A SERIES 2
25 TONS INCLINABLE
POWER PRESS

INCLINABLE POWER PRESSES

1½ TONS TO 70 TONS CAPACITY

MANUFACTURED BY

JOHN HEINE & SON PTY. LTD.

LEICHHARDT N.S.W. Telephone: LM 1444, 4627, 4588

Representatives:

In Melbourne, Adelaide and Perth . . . McPherson's Ltd.
In Brisbane . . . Engineering Supply Co. of Aust. Ltd.
In New Zealand . . . John Chambers & Son Ltd.

Telegraphic Address: HEINESON, SYDNEY.

JH.A5

ably complete with pump and controls. Particulars to Ref. 8212, c/o "The Australasian Manufacturer."

PLANT AND EQUIPMENT — AGENCIES WANTED: Reputable commercial engineer, excellent connection, wide experience, starting own marketing manufacturing organisation, centred Sydney, wants agencies for Australian produced plant, equipment, and supplies for engineering, building and manufacturing industries. Write to Ref. 8213, c/o "The Australasian Manufacturer."

ALUMINIUM SHEETS: Merchants or manufacturers in a position to supply the inquirer with 16, 20 and 22 gauge Aluminium Sheets and Circles, are requested to write to Ref. 8214, c/o "The Australasian Manufacturer."

ELECTROSTATIC SPRAYING: Manufacturers specialising in Electrostatic Spraying, are asked to write to Ref. 8215, c/o "The Australasian Manufacturer." The inquirer desires to place an even, tough plastic or synthetic rubber coating on Wire Baskets.

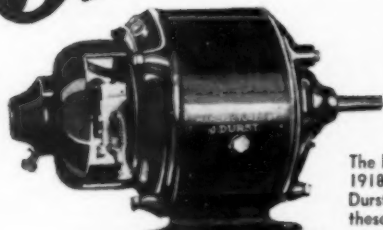
PLASTIC SHEETS FOR SALE: Sydney firm wishes to dispose of: 545 lbs. 1/16 in. Sheet XXP Dilecto; 75 lbs. 1/16 in. Sheet Natural Panelite; 76 lbs. 3/64 in. Sheet XPLW/30 Dilecto; 183 lbs. 1/8 in. Sheet Natural Laminex; 148 lbs. 1/8 in. Sheet Natural XXXP Dilecto; 2,847 lbs. 1/8 in. Sheet Natural Paxolin. Best offer accepted. Write to Ref. 8216, c/o "The Australasian Manufacturer."

CLOTHES PEGS, DRAWING PINS AND FURNITURE SPRINGS: Dutch concern wants to enter into relations with an Australian firm in order to establish a factory producing Clothes Pegs, Pins, Fancyscoursers, Christmas articles, Drawing Pins and Furniture Springs. Machines can be delivered from Holland. Only first class proposals are taken into consideration. Reply to Ref. 8217, c/o "The Australasian Manufacturer."

PATENT ALUMINIUM MACHINES — AUSTRALIAN PRODUCTION WANTED: English firm exporting patent aluminium machines to Australia desires to contact Australian general engineers with first-class aluminium casting, machining and assembling facilities, view production in Australia. Write Ref. 8218, c/o "The Australasian Manufacturer."

PRODUCTION OF ART POTTERY AND DOMESTIC CROCKERY: Oversea firm which specialises in the manufacture of art pottery and domestic crockery wishes to engage in the production of such commodities in Australia and is interested in partnership or other form of business association with a similar existing establishment in this country. Firms interested in this inquiry write to Ref. 8219, c/o "The Australasian Manufacturer."

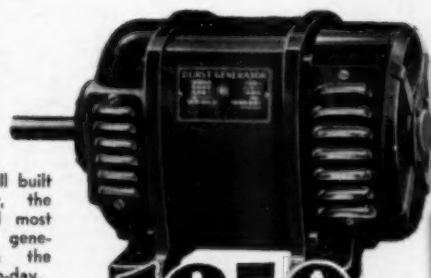
32 YEARS OF GENERATOR PROGRESS by DURST MOTORS



1918

The latest type in 1918. Built by Durst — some of these are still in use.

We can now supply without delay this highly-efficient unit — DURST dependable generators — write or 'phone us your requirements.



1950

1950. Still built by Durst, the latest and most efficient generator on the market to-day.

DURST

MOTOR AND ELECTRIC INDUSTRIES PTY. LTD.
189-189b ST. JOHN'S ROAD, FOREST LODGE
Telegraphic Address: "DURST," Sydney. Telephones: MW 1470, MW 1755.



FERRO ENAMELS (AUST.) PTY. LTD.

Parent Company: FERRO ENAMEL CORPORATION
CLEVELAND, OHIO, U.S.A.

Associated Companies in: ENGLAND, HOLLAND, CANADA, FRANCE,
BRAZIL, ARGENTINE, MEXICO, SOUTH AFRICA.

WORLD LEADERS IN THE VITREOUS ENAMEL AND CERAMIC FIELDS

MANUFACTURERS IN AUSTRALIA OF:—

PORCELAIN ENAMEL FRITS AND POWDERS; COLOUR OXIDES
FOR THE ENAMELLING AND CERAMIC INDUSTRIES; POTTERY
CLAYS, CASTING SLIP, GLAZES, STAINS, Etc.

ENAMELLING SUPPLIES:—

PORCELAIN MILL BALLS; PORCELAIN MILL LININGS; METAL
CLEANERS; ASBESTOS GLOVES; ENAMELLING CLAY, Etc., Etc.

ENGINEERS TO THE ENAMELLING AND CERAMIC INDUSTRIES — YOUR EQUIPMENT DESIGNED, SUPPLIED AND INSTALLED:—

FURNACES; KILNS; CHARGING FORKS; BALL MILLS; DRIERS;
OIL BURNERS, BLOWERS, Etc., Etc.

27 BOURKE ROAD,
ALEXANDRIA, N.S.W. TEL. MX 1151

Copolymer Resins for Rubber

The reinforcement of rubber by means of a resin instead of the conventional carbon black was one of those happy accidents that came from development work in a completely unrelated field. Early in the 1930's, a cyclized rubber product was introduced under the name of Pliolite. This rubber resin displayed unusual chemical inertness and was soon established as a base for chemical-resistant paints.

BECAUSE of the inertness of Pliolite, it was incompatible with most of the ingredients used in making conventional paints, and a long, painstaking development programme was undertaken to evaluate materials as possible plasticisers and softening agents. One of the materials tested and found to be compatible was natural rubber. From a paint standpoint, however, mixtures of Pliolite and natural rubber were impractical due to the high solution viscosity of the rubber. But tests were made to determine the effect this new resin would have on rubber compounds. It was found that Pliolite actually reinforced natural rubber.

By the beginning of World War II, the use of Pliolite was firmly established in such specialty rubber applications as golf ball cover stocks and wire insulation.

During the war years, writes William H. Aiken in "Modern Plastics," tens of thousands of compounds were made in the search for improved synthetic rubbers. The properties desired in a reinforcing

resin for rubber were well-known—and the polymerisation chemists were able to make a satisfactory product from styrene and butadiene—the raw material from which G.R.S. is made. G.R.S. is chiefly butadiene, with enough styrene added to give it strength and good workability. The new copolymer-reinforcing resins are chiefly styrene with only enough butadiene to give them compatibility with rubber.

Two copolymer resins have been introduced which give properties in natural rubber equal to those obtained with Pliolite, and properties in G.R.S. and Buna N superior to those obtained with Pliolite. These resins are known as Pliolite S-3 and Pliolite S-6. For most applications, Pliolite S-6 is recommended. Pliolite S-3 is a somewhat softer resin and has a lower heat distortion temperature. It is recommended in applications such as golf ball cover stock and wire insulation where maximum flow of the stock is required.

PROPERTIES IMPARTED

Reinforcement: These copolymer resins reinforce natural and synthetic rubber stocks—that is, they give an all-around improvement in strength characteristics. This makes possible the production of light and bright-coloured rubber articles with excellent durability. In black compounds, these resins give added reinforcement that could be obtained only by overloading.

Effect on tensile: When used in small amounts, the copolymer resins usually show little effect on tensile strength. In some G.R.S. stocks, however, 10 to 20 parts of these resins give appreciable increases in tensile. Large amounts of the resins usually give some reduction in tensile in all stocks.

Effect on elongation: The addition of small amounts of Pliolite copolymer resins to natural and synthetic rubber stocks usually has little effect on elongation. In some G.R.S. stocks, 10 to 20 parts of these resins actually increase elongation. In these stocks the addition of the copolymer resin makes the stock both longer and stronger. When used in larger amounts, these resins usually reduce elongation.

Effect on stiffness: Natural and synthetic rubber stocks are effectively stiffened by the use of these copolymer resins. Very stiff stocks can be obtained by a combination of them with either black or mineral filler without sacrifice of other physical characteristics or detracting from processability.

Effect on hardness: Pliolite copolymer resins can be used to give extremely high hardness to black and mineral-loaded stocks without destroying other physical characteristics and still maintaining good processing characteristics.

Effect on tear resistance: These copolymer resins improve the resistance of rubber stocks both to initial tearing and cutting and to continued tearing and cutting once it is started.

Effect on abrasion resistance: The addition of copolymer resins to natural and synthetic rubber stocks improves the abrasion resistance and alters the type of abrasion.

Effect on flex life: The addition of Pliolite copolymer resins greatly improves the flex life of natural and synthetic rubber stocks. A typical example is basketball cover stock. A ball covered with the conventional cover stock failed after 18,000 compressions in a machine that compresses them 25 per cent. The stock to which 20 parts of S-6 were added was compressed 60,000 times before failure occurred.

Effect on brittle point: Addition of up to even 50 parts of Pliolite copolymer resins has no effect on

the brittle point of G.R.S. and natural rubber stocks.

Effect on processability: Pliolite copolymer resins can be incorporated into synthetic and natural rubber stocks either on the mill or in the Banbury. In the case of Banbury mixing, the resin itself can be added directly to the Banbury and good dispersion is obtained. In a rubber compound, the copolymer resins improve processability, for at elevated temperatures they act as plasticisers to soften the stock. Upon cooling, stocks containing these resins shrink less than stocks in which the copolymer resins are not present.

In calender-coated rubberised fabric, the stock is plasticised at the elevated temperature of the calender by the copolymer resins to give a good working stock that results in a smooth surface. This calender coated fabric has excellent abrasion resistance. Although the copolymer resins give high viscosity solutions at rather low solids, the viscosity is reduced by milling the resin in incorporating the rubber. Solutions of 25 to 30 per cent. solids, which contain as much as 20 per cent. resin, are found to be suitable for spread coating of fabrics.

Pliolite copolymer resins promote the flow of rubber stocks to completely fill out a mould and prevent shrinkage, so that the item is a faithful reproduction of the mould. In the extrusion of rubber items, the copolymer resins aid extrusion and insure an excellent surface. In such extruded items as refrigerator gaskets, fire hose, and steam hose, they also add stiffness and general reinforcement.

THAT MAGIC WORD

We know quite a lot about Plastics—enough to help you if you want advice on the subject

Our experience covers the Manufacture of:

- PAINT BRUSH HANDLES
- TEXTILE PERNS and BOBBINS
- METER and CLOCK CASES
- STOVE and REFRIGERATOR PARTS
- BRUSH BACKS
- COAT HANGERS
- MIXING MACHINE PARTS

Plastics"

- ADVERTISING NOVELTIES
- PLATES, CUPS and SAUCERS
- BEAKERS and BOWLS
- LAMPS and LAMP SHADES
- CHAIR SEATS and BACKS
- RADIO CABINETS
- ELECTRIC FAN PARTS, Etc. Etc. Etc.



Makers of the famous "BEXWOOD" Plastic Wood
and a large range of Toilet Brushware and Fancy Goods

DIE MAKERS. CUSTOM MOULDERS AND PERSPEX FABRICATORS

BRITISH XYLONITE (AUST.) PTY. LTD.

NEPEAN HIGHWAY
EAST BRIGHTON. Tel. XB 3121 (4 LINES)

(SYDNEY Tel. M885)

BURBANK Tel. B230

ADELAIDE Tel. C400, 4015

PERTH B4744

SHOWROOMS:

137 ST. COLLINS STREET

MELBOURNE. TEL. MU 5024

IT'S RIGHT

IF MOULDED BY BRITISH XYLONITE

ISMAY
LAMPS
Scientifically
Built for
Better Light
Australian Distributors:-
STEWART J. MATTHEWS PTY. LTD.
217 William St., Melbourne, C.I.
Telephones: MU 6483

A
book for
the
designer



Giving representative designs of various machines, and the way in which Timken tapered-roller bearings are installed, this book should be on the desk of every designer.

BRITISH TIMKEN LTD., Duxton, Northampton and Birmingham 7, England. (Subsidiary Company: Fletcher Bearings Co. Ltd., Wolverhampton, England.)

AUSTRALASIAN INDUSTRIAL DISTRIBUTORS:
MELBOURNE, Victoria: Bearing Service Co. of Aust. Pty. Ltd., 222 Queen St., P.O. Box 2371, SYDNEY, New South Wales: Bearing Service Co. of Aust. Pty. Ltd., 38 Wentworth Ave., BRISBANE, Queensland: Bearing Service Co. of Aust. Pty. Ltd., 329-331 Adelaide St., Box 2553, G.P.O. ADELAIDE, South Australia: Duncan & Co. Ltd., 107-109 Pirie St., PERTH, Western Australia: Bearing Service Co. of Aust. Pty. Ltd., 856 Hay St., NEW ZEALAND: Jas. J. Niven & Co. Ltd., 65-71 Taranaki St., P.O. Box 1908, Wellington.

TIMKEN
tapered-roller bearings

Effect on cure: Inclusion of up to 20 parts of a Pilolite copolymer resin appears to have no detrimental effect on the curing rate of synthetic and natural rubber compounds. The cure time for some stocks may actually be greatly reduced by the use of the copolymer resins. This is especially true for those stocks in which high hardness is normally obtained by over-curing. By the incorporation of 10 to 20 parts of resin in the formulation, the cure time can be cut as much as 50 per cent. and the same hardness maintained. In stock containing larger amounts of resin, some adjustment of cure may be necessary. It has been found that if no adjustment in curing ingred-

ients is made, the strength properties of a G.R.S. stock began to fall off when 40 to 50 parts of S-6 are used. If, however, the cure is adjusted, the properties continue to rise even upon addition of large amounts of resin. Additional curing agents should be added in the same proportions as if the resin were rubber. That is, if 50 parts of resin are used per 100 parts of rubber, 50 per cent. more curing agents should be used than would be used for 100 parts of rubber in which there is no resin.

Effect on ageing: The addition of Pilolite copolymer resins to natural and synthetic rubber stocks improves oven ageing — especially of natural rubber. Twenty parts of

S-6 gives optimum characteristics both before and after ageing.

Effect on water absorption: The copolymer resins are hydrocarbon in composition and have very low water absorption. Therefore, in many rubber stocks they lower the water absorption of the compound.

The largest present use for these copolymer resins is in hard soles, heels, and top lifts. Rubber shoe

soles must have a certain amount of stiffness and hardness, good flex life, good abrasion resistance and good tear resistance—all properties added by S-6. In addition, S-6 improves processability and gives good reproduction of the mould.

Rubber flooring must be hard, scuff resistant, and abrasive resistant. Throughout its years of

(Turn to page 43.)

LEEDS WATER METERS

For Measuring HOT and Cold Water
for all industrial purposes
IMMEDIATE DELIVERY

Australian Agents:

H. G. Thornthwaite & Co.

43 Margaret Street, Sydney.

'Phone: BX 3803

VIC.: A. A. Phoenix Co., 498-500 Flinders St., Melbourne, S.A.: E. Treloving & Son Ltd., Light Square, Adelaide, W.A.: S. Y. Garsaworthy, 60 St. George's Terrace, Perth, Q.L.D.: Farbury, Henty & Co., Pty. Ltd., 106 Edward St., Brisbane, TAS.: Douglas & Fraser, 41 Pater-son St., Launceston.



Canteen Managers

REFRIGERATION:

Our "JACK FROST" Universal 3-Door Cabinet has been specially designed for your food storage requirements. Made in 3 standard sizes, 33, 51, and 68 cubic feet, with 3 temperatures in one cabinet, to give correct storage conditions for all kinds of food.

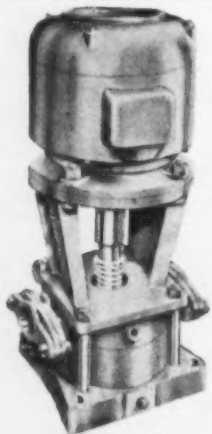
Send for our illustrated Bulletin K for full details.

Gordon Brothers Pty. Ltd.

120 Union Street,
BRUNSWICK, VIC.
'Phone: FW 2167 (3 lines).

Lord Street and Edgeware Road,
ST. PETERS, N.S.W.
'Phone: LA 5138 (3 lines).

"Superior Refrigerating Machines Since 1917"



MADE BY
RYALAND
(MANCHESTER)
LIMITED

AUSTRALIAN
DISTRIBUTORS:

RYALAND VERTICAL SELF-PRIMING PUMPS

DESIGNED FOR PUMPING WATER, HOT CONDENSATES, LIGHT OILS AND EMULSIONS, CONCENTRATED ACIDS, WINES, SPIRITS, PETROL AND PARAFFIN

AVAILABLE IN THREE MODELS
CAPACITY: 300-1,300 GALS. PER HR.

These pumps have one moving part—the shaft with its impeller and seal. The self-priming feature—that is, the ability to draw air, steam or vapour as well as liquid—is obtained by the special design of the channels and ports along which the liquid or gas is driven by the impeller. This is of particular importance, since it is maintained throughout the life of the pump and there is no possibility of a failure at a critical moment. These pumps have no glands requiring frequent attention—they do not require relief valves nor check valves. Driven by high-grade, continuously-rated motors—they can be fitted and left to do their job with unfailing certainty.

G. R. GAYFER & CO. PTY. LIMITED

52 PITT STREET, SYDNEY, N.S.W.

Box 4660, G.P.O., Sydney.

Telephone: BU 1082.

REPRESENTATIVES AT MELBOURNE, BRISBANE, ADELAIDE

ALSO AUSTRALIAN DISTRIBUTORS FOR:

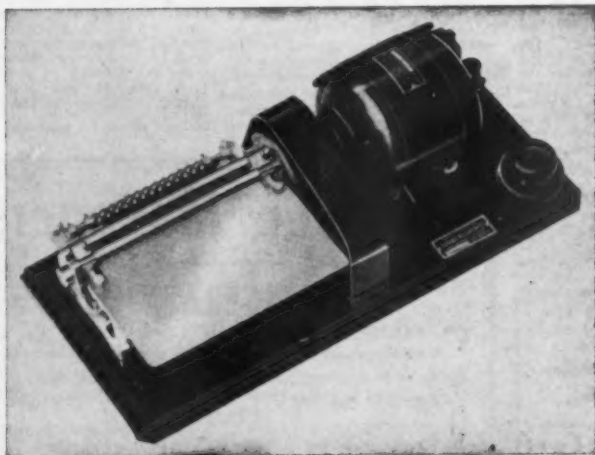
RADCO Steel
Sectional Boilers
and Heat Transfer
Equipment

HODGKINSON
Mechanical Stokers
GULF Steel
Radiators

F. H. BIDDLE
(British Trans)
Air-Conditioning
Equipment

RYALAND
Hot Water Accelerators
GAYFER
Console Heaters

LUMBY'S
Cast Iron
Sectional and Domestic
Boilers



"ADVANCE" LABEL GUMMING MACHINES

(Aust. Pat. No. 124270—6/12/44)

For

Cleaner Labels

and

Increased Production

ADVANCE MACHINERY PTY. LTD.

386 SUSSEX STREET, SYDNEY - 'PHONE : MA5248

WELDON HARDWARE



Manufactured by
W. H. WELLS PTY. LTD.
137-138 Abbotsford St., Nth. Melb.
Interstate Representatives:
N.S.W., Qld. & N.Z.: Essex R. Pich
Pty. Ltd., 222 Clarence St., Sydney.
South Australia: Wm. C. Keany, 141
Rundle St., Adelaide. Western Aus-
tralia: Associated Distributors, 890
Hay St., Perth.

(Continued from page 41.)

service it must retain its excellent surface and attractive appearance. Pilolite copolymer resins are used in rubber flooring to give these properties, and to reduce the curing time.

These copolymer resins add reinforced to wire cover stocks, and improve processing characteristics so as to make possible the extrusion of thin-walled wire insulation of uniform wall thickness. The improved age life given to natural rubber by the copolymer resins is an added reason for including them in such stocks.

Many golf ball manufacturers extend their scarce supply of balata (the usual material for golf ball covers) and at the same time keep the cost of their ball down by using a mixture of Pilolite copolymer resin and natural rubber. The S-B copolymer acts as a plasticiser for the cover stock so that it flows into the winding to give very excellent adhesion. It is reported that golf balls covered with this stock have desirable characteristics of good click and long flight.

After Business Hours

(Continued from page 3.)

them next morning in the lugger the crew, who had heard garbled accounts of the fate of their fellow Asiatics, were all set to repel boarding parties of headhunters. They were very relieved that a white family lived on the island but when he returned a couple of days late they had fled the ship and he took formal possession under the laws of salvage. Owing to the isolation of the bulk he eventually purchased it for five pounds.

During the war a number of air-men came down on the island and the Japanese carriers Ryukaku, Shikaku and a cruiser met their fate close by. The American carrier Lexington was also sunk just south of Rossel, the island being the storm centre around which the Coral Sea battle was fought.

To outward appearances the Rossel Islanders have become the mist childlike and happiest of all natives. That they have not lost their former courage, however, is borne out by the tributes paid them by the late Jack Hides. On the

arduous and dangerous journeys he made into the unexplored Papuan hinterland, the rigours of which eventually brought about his tragic and untimely death, he found he could depend on the little Rossel Islanders to stick by him through thick and thin.

And what happened to the sole

surviving Chinaman? He took up residence in South Australia, and some years before he died he appeared before the court on a charge of selling sly grog. When the magistrate was acquainted with the story he dismissed the charge. It is an ill wind, therefore, which blows nobody any good.



Some surfaces are hard to clean . . .

—but metal surfaces are easily degreased by I.C.I. methods. If you have a metal degreasing problem, consult us—we will solve it for you. Metal degreasing by trichlorethylene—adaptable, efficient and economical—is the ideal system for engineering workshops and factories.

I.C.I. TRICHLORETHYLENE METAL DEGREASING

IMPERIAL CHEMICAL INDUSTRIES OF AUSTRALIA & NEW ZEALAND LTD.

408 LATROBE STREET, MELBOURNE
251 GEORGE STREET, SYDNEY — 293 QUEEN STREET, BRISBANE
I.C.I. (N.Z.) LTD., AUCKLAND AND WELLINGTON, NEW ZEALAND

Agents: Elder, Smith & Co. Ltd., Sth. Aust. and West. Aust.; Chemical & Textile Agencies Pty. Ltd., Tasmania

MDG-2-X-757

DO YOU USE OUR
INQUIRY DEPARTMENT
SEE PAGE 36

PRECISION PORTABLE TACHOMETERS



SYNCHROTAC INSTRUMENT Co. Pty. Ltd.
142 QUEENSBERRY STREET, CARLTON, VICTORIA.

THE ONLY
**UNIT
HEATER**
with the
"AEROFIN"
COIL



Carrier UNIT HEATERS

The AeroFin Coil, which is exclusive to Carrier, was designed by their engineers to meet every requirement of modern advanced fan systems of unit heating. The Carrier Unit Heater is efficient, adaptable and—

Engineered as a Complete Unit for Greatest Economy

Right now is the time to get in touch with Carrier engineers about your prospective heating requirements. Practical suggestions from Carrier's experienced and trained technical staff can mean important savings for you. Types for practically every requirement are available, for high and low pressure steam, hot water or electrical elements.

Write or phone to-day for complete information.

Carrier

CARRIER AIR CONDITIONING LIMITED

96-98 Bourke Street,
East Sydney, N.S.W.
Phone FA 7144

15-17 Lincoln Square,
South Carlton, N.S.
Melbourne, Vic.
Phone FJ 4334

Penney's Building,
298-308 Queen Street,
Brisbane, Q'd.
Phone B 8148

"Carbostil"
and
"Aluminox"
Slipstones,
Axestones
and
Benchstones.



GENERAL ABRASIVES PTY. LTD.
325 Hoddle Street, Abbotsford, N.S. Vic.

NEW FACTORY REGISTRATIONS

NEW SOUTH WALES.

I. G. Adams, 29 Barker Avenue,
North Lidcombe—Joinery.

P. R. Arnold, 115 Ramsgate
Road, Ramsgate—Canvas and
Holland Blinds.

Fairy Dell, 42a Railway Street,
Lidcombe—Children's Clothing.

"Best Knit" Pty. Ltd., Little
Strand Arcade, King Street, Syd-
ney—Men's and Ladies' Under-
wear.

H. E. Beves, 75 Marion Street,
Enmore—Small Cane Tables and
Chairs.

S. Biner & Sons, 162 Parramatta
Road, Stanmore—Clothing.

Enfield Engineering Co., 325a
Liverpool Road, Enfield—Mechan-
ical Engineering.

Lingette Lingerie, 590 George
Street, Sydney—Clothing.

Brodericks Pty. Ltd., 37 Ancrum
Street, North Sydney—Ladies'
Clothing.

J. A. Brooks Pty. Ltd., 237
Castlereagh Street, Sydney—Lea-
ther Travel Goods.

Camden Constructions Pty.
Ltd., Argyle Street, Camden—
Mechanical Engineering.

Chronol Industrial Chemicals
Pty. Ltd., cnr. Deniehy and
Tennyson Streets, Granville—
Chemicals.

VICTORIA.

Block Industries Pty. Ltd.,
Apollo Bay—Axe Handles.

Mineral Drillers Ltd., 86-106
Plenty Road, Preston—Drilling
Equipment.

Hall, C. O., 224 St. Georges
Road, Croxton—Paper, Piping
Cord.

Shay, D. D., 99 Acland Street,
St. Kilda—Confectionery.

Mallia, A., 185 Lonendale Street,
Melbourne—Confectionery and
Cordials.

Fanning, K. H., Fisher Street,
Stawell—Motor Body Rep.

De Jersey, C. L., & Sons Pty.
Ltd., 861a Nepean Highway, Mor-
abbin—Engineering.

Symmonds, A. T., Maroonah
Highway, Croydon—Gen. Eng.

Edenhope Electric Supply Co.
Pty. Ltd., Edenhope—Electricity.

Barker, Green, & Parke Pty.
Ltd., Wyndham Street, Sheppar-
ton—Fruit Packing and Grading.

Handley, P. E. & T., 43 Foster
Street, Dandenong—Bedding.

Foldaway Furniture Pty. Ltd.,
Coord Road, E. Oakleigh—Fold-
ing Furniture, etc.

Lignum Trading Co. Pty. Ltd.,
North Road, E. Oakleigh—Sawn
Timber.

Schweinberg & Gdanski, 567
Chapel Street, Sth. Yarra—Shoes.

Woolford, M. J., 285 Canter-
bury Road, Canterbury—Clothing.

Palmer & Synan, cnr. Sussex
and Marion Streets, Coburg—
Metal Stampings.

Langford Clements Pty. Ltd.,
Murray Avenue, Numurkah—
Pre. Fab. Houses.

Industrial Companies and Firms

NEW SOUTH WALES.

CUTNER ENVELOPE CO.
PTY. LTD.—Capital: £25,000.

Manufacturers of envelopes, car-
tons, boxes and stationery. Sub-
scribers: Roger H. Tillam and
Henry F. Henville. Registered
Office: Sydney. (Lodged by W.
P. McElhone & Co., 44 Martin
Place, Sydney.)

GALVANISED INDUSTRIES
PTY. LTD.—Capital: £25,000.

Manufacturers of galvanised and
sheet metal products. Sub-
scribers: John C. W. Bridge
and Harry H. Richer. Registered
Office: Newcastle, N.S.W.
(Lodged by Galloway & Co., 129
Pitt Street, Sydney.)

JONES, BERNARD (A.) PTY.
LTD.—Capital: £30,000.

Manufacturers of leather dressings and
polishes. Subscribers: Bernard T.
McC. Jones and Denzil Macar-
thur-Onslow. Registered Office:
Sydney. (Aubrey F. Crawley, 60
Hunter Street, Sydney.)

SYKES, W. E. (A'ASIA) PTY.
LTD.—Capital: £10,000.

Machine tool manufacturers. Subscribers:
John J. Watling and John E.
Thomson. Registered Office:
Sydney. (Lodged by Sly & Rus-
sell, 16 Barrack Street, Sydney.)

(Turn to page 46.)

STEEL, MILD STEEL AND BRASS WIRE ANY QUALITY OR FINISH

COILS OR CUT LENGTHS

Specialities. Precision Drawn PINION ROD
AND SPECIAL SECTIONS in Steel, Brass,
Nickel Silver, etc. "TECTIC" Brand
HARDENED AND TEMPERED Steel Wire for
Brush, Upholstery and other trades.

JOHN RIGBY & SONS LTD.

Head Sales Office and Works:
Low Moor, Bradford, Yorks.

Branch Works:
Cleckheaton and Heckmondwike, Yorks.

Offices:
London, Birmingham and Salford.

RIGBYS *for* **WIRE**

WOVEN WIRE CLOTH FOR ALL INDUSTRIAL PURPOSES

From 120 mesh to heaviest 3in. mesh
of one inch bar.

OUR RANGE covers the manufacture of wire cloth
and gauze in Steel, Copper, Silver, Brass, Monel and
Galvanised for every use in

Mining, Conveyor Belt Work,
Food Preparation, Clothing and
Hosiery Manufacture, Agriculture.

SCREENS

of any mesh for Stone, Coal,
Fertilizers, Fruits, Cereals, etc.

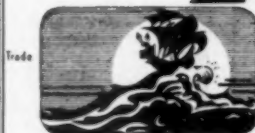
Wire Mesh for Road Making, Poultry
Floors, Lift Enclosures, Windows
and Machinery Guards.

"WRIGHTMAKE" REINFORCEMENTS
for PARTITION WALLS, Etc.

E. Wright & Co. Pty. Ltd.

148-152 Cleveland St., SYDNEY. Tel.: MX 3428.

Crest



THIS IS YOUR GUARANTEE OF
UNSURPASSED QUALITY AND
UNIFORMITY.

Zinc Oxide

Manufactured in Australia by
Crest Chemical Company Pty. Ltd.
PERRY ST., MATRAVILLE, N.S.W.
Telephone FJ2493.



ARUP AND BRUHN Pty. Ltd.

ARE EXTENDING THEIR BUSINESS
AND OPENING A
NEW YORK
OFFICE

Enquiries are invited from Manufacturers, Factory
Agents, Wholesalers and Suppliers who wish
to develop trade, or have representation,
in North America.

Please direct all enquiries to

ARUP AND BRUHN Pty. Ltd.

MA 3800 Box 4694, G.P.O., Sydney. M 6960

PUMPS — "EBS-RAY" — PUMPS



**POSITIVE DISPLACEMENT ROTARY PUMPS
GEAR WITHIN A GEAR PRINCIPLE
ONLY TWO MOVING PARTS!
2 to 250 G.P.M. PRESSURES to 400 P.S.I.**

"EBS-RAY" Pumps are in everyday use for the transfer of: Acids, Alcohol, Chemicals, Fuel Oils, Glycerine, Food Products, Fruit Juices, Milk, Molasses, Paint, Tar, Tallow, Varnish and Wine.

HIGH VACUUM PUMPS in capacities of: 1, 5, and 15 cub. feet per min. Vacuum of .006 m.m. of mercury or better.

CONSULT US REGARDING YOUR PUMPING PROBLEMS!

EBS-RAY DISTRIBUTORS PTY. LTD.

438 Victoria Street, Darlinghurst, Sydney, N.S.W.
Tele.: PA 3798, FA 8468. Cable: "EBSRAY," Sydney.
Sole for Vic and Tas.: KL DISTRIBUTORS PTY. LTD., 460 Bourke Street, Melbourne.

(Continued from page 44.)

YORKSHIRE DYEWARE & CHEMICAL CO. (A/ASIA) PTY. LTD.—Capital: £10,000. Manufacturers of dyestuffs, tanning products, soaps and wetting agents. Head Office: South Yarra, Vic. N.S.W. Agent: James E. Lee, 1 Nickson Street, Surry Hills.

VICTORIA.
BEEBY KNITTING MILLS LTD., Melbourne. Textile manufacturers. Capital: £50,000. Subscribers: H. S. Beeby, E. F. Beeby, A. McDonald.

NU-FABRICS CO. LTD., Melbourne. Softgoods manufacturers. Capital: £25,000. Subscribers: J. Finkelstein, R. D. Funnell, J. W. Cassidy, M. R. Schwiger, P. Wilson.

DAYTEX FABRICS LTD., Melbourne. Yarn merchants. Capital: £50,000. Subscribers: T. L. and E. Holmes, T. A. and T. D. McDermott.

DALSON PRODUCTS LTD., manufacturers household utilities, 783 Sydney Road, Brunswick. Capital: £10,000. Subscribers: G. C. Andrews, L. G. Norman, F. B. Hodson.

JOHN HOLLAND & CO. LTD., 108 Queen Street, builders and engineers. Capital: £10,000. Subscribers: H. H. D. Ingram, D. Anderson.

LEWIS MCKENZIE LTD., clothing manufacturers. Capital: £10,000. Subscribers: F. H. Moylan, E. T. Lewis, C. M. McKenzie, N. S. Lancel.

FRYDANJOY LTD., clothing manufacturers, Eltham. Capital: £10,000. Subscribers: F. H. and A. J. Collis, R. G. and V. J. Duncan.

H. E. COURTNEY LTD., shop-fitters, Melbourne. Capital: £5,000. Subscribers: C. R. Rose, A. N. Super, L. Fink, E. Atkins.

FRED DODGE LTD., suitcase manufacturers, Melbourne. Capital: £10,000. Subscribers: H. Juest, M. and H. Deutsch, F. and G. Dodge.

CHAS. R. WALKER & SON LTD., merchants, EsSENDon. Capital: £150,000. Subscribers: N. A. and R. A. Ridgway, N. J. Barclough, A. M. and C. R. Walker.

VEALLS L.S.D. LTD., dealers, 490 Elizabeth Street. Capital: £10,000. Director: A. J. Veall.

J. H. MAGRATH & CO. PTY. LTD., manufacturers, 208 Little Lonsdale Street. Capital: £30,000. Subscribers: J. H. Magrath, A. C. J. Lampshire.

BRILL & SALTER LTD., fabric manufacturers, Melbourne. Capital: £10,000. Subscribers: H. Juest, R. Brill, I. and R. Salter.

J. B. CAMERON & CO. LTD., machinery merchants, Ballarat. Capital: £25,000. Subscribers: N. Cameron, W. S. and N. S. Cameron, R. W. Brown, G. D. Metcalfe.

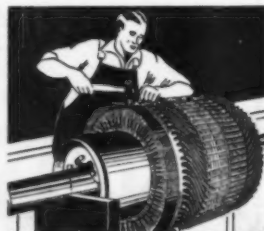
Manufacturing Engineers

Automatic and Capstan
Turning, Milling, Drilling,
Cutter Grinding

GENERAL MACHINING
AND ASSEMBLY

W. B. STEEN PTY. LTD.

129 Palmer St., Richmond, Vic.
Private Phone: XY 1603
For Precision and Service



ANY HOUR OF DAY OR NIGHT

● Breakdown Service is instantly available.
● Transformers, Motors, Switchboards, etc., supplied and installed.

STOWE ELECTRIC PTY. LTD.

2-4 DRUITT PLACE, SYDNEY.
Phone: MA 6871 (4 Lines).

CODE

PRUNING SHEARS

Essential in
Vineyards &
Orchards.

Ideal for
General
Pruning
Requirements.

The
World's
Best.

OBTAINABLE
ALL STORES

Agents:

F. W. GREEN
20 Queen Street, Melbourne.
FARLEY & FAHY
Grenfell Street, Adelaide



REDUCING VALVES

Now Available - for STEAM, AIR,
GASES and WATER

Simple in design, reliable and accurate in performance. A VALVE TO SUIT ALL CONDITIONS.

"STANDARD" pattern, where reduced pressure is not less than 2/5ths of inlet pressure.

"QUITTETTE" where reduced pressure is less than 2/5ths of inlet pressure.

"FULL BORE" pattern, where large volumes are to be passed.

Consult your representative for advice and recommendations on pressure reduction and regulation problems. Write for literature.

Australian Representative: **E. TRELIVING & SON LTD.**

Light Square, Adelaide. Phone: C 4075.

Interstate Representatives—Qld.: Beiers & Ridgway Pty., 318 Adelaide St., Brisbane, N.S.W.: Duff & Macintosh Pty. Ltd., Austral Chambers, 39 Pitt St., Sydney, Vic.: H. W. J. Anderson Pty. Ltd., 35 William St., Melbourne, Tas.: Douglas & Fraser, 41 Paterson St., Launceston, W.A.: Atkins (W.A.), Ltd., 894 Hay St., Perth.

manufactured by **DAVID AULD & SONS, LTD.**, Glasgow, Scotland
reducing valve specialists for over 100 years

DO YOU USE OUR
INQUIRY DEPARTMENT
SEE PAGE 36



General Engravers

★ MACHINE ENGRAVING ★ ELECTROPLATING
★ BADGES ★ MEMORIAL TABLETS
★ BUILDING PLATES ★ METAL STAMPINGS
★ NAMEPLATES ★ STREET SIGNS

ENR THE BOULEVARDE & THE BROADWAY
PUNCHBOWL N.S.W.

CABLE MAKERS' G.M. GOES OVERSEAS.

Mr. A. L. Blake, General Manager of Cable Makers (Australia) Pty. Ltd., Liverpool, N.S.W., leaves for overseas this month to investigate and study in the United States of America and the United Kingdom the latest trends in the manufacture of rubber and P.V.C. electric cables.



Mr. A. L. BLAKE,
General Manager of Cable Makers
(Australia) Pty. Ltd.

This is in conformity with Cable Makers (Australia) Pty. Ltd.'s policy and practice of keeping abreast of all modern technical and commercial developments in the electrical cable industry. Whilst away Mr. Blake will also take the opportunity of conferring with other manufacturers within the world-wide organisation of the Cable Makers' Association, of which this Australian Company is a member.

Mr. Blake, who will be accompanied by his wife, leaves Sydney by Canadian Pacific Airlines to fly to United States of America via Fiji and Honolulu. Mr. Blake is expected to be away for approximately four months.

WINE INDUSTRY APPOINTMENT.

An announcement of more than ordinary interest in the wine industry is that of the prospective departure of Mr. John M. Guinand from Renmark (where he has been with Angoves Ltd. for 25 years) to

become assistant managing director of the Emu Wine Co. Pty. Ltd. at Morphett Vale.

This change will take effect from October. Mr. Guinand's appointment to work with the Managing Director of the Emu enterprise in South Australia (Mr. Colin Haselgrove) is understood to be associated with plans for expansion of

this important and historic company's production and selling programme in Australia and other markets.

Mr. Guinand graduated at Roseworthy Agricultural College, after which he spent two years at Montpellier, famous centre of oenological study in France. Subsequently he worked for nine months in Al-

geria. On returning to Australia he joined Angoves, where he has been sales director for the past 12 years.

Lately he has risen to considerable heights in Australia's select circle of wine show judges. He will be appointed also to the board of directors of the Emu company's W.A. subsidiary, Valencia Vineyards Pty. Ltd.

The late D.Sc., Dr. Whyted,
When questioned below was delighted.
Heat treatment preferred?
He blandly demurred
"But Cassel, of course", and ignited.



The effectiveness of all "Cassel" Brand Heat Treatment Salts is the result of wide experience and exhaustive testing under operating conditions. Take advantage of the technical service designed to assist you in their use. Contact your nearest I.C.I. branch for complete information.

"Cassel" Brand
HEAT TREATMENT SALTS

IMPERIAL CHEMICAL INDUSTRIES OF AUSTRALIA & NEW ZEALAND LTD.

408 LATROBE ST., MELBOURNE • 251 GEORGE ST., SYDNEY • 293 QUEEN ST., BRISBANE
I.C.I. (N.Z.) LTD., AUCKLAND & WELLINGTON, NEW ZEALAND

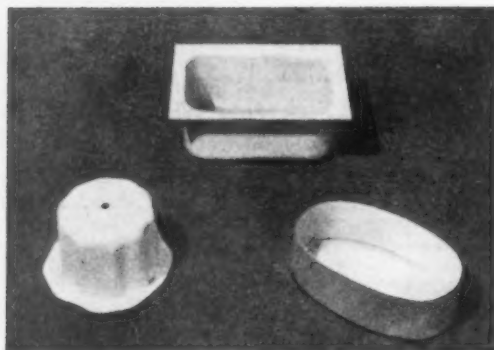
Agents: Elder, Smith & Co. Ltd., South Australia and Western Australia; Chemical & Textile Agencies Pty. Ltd., Tasmania.



ICI



Operator placing blank on the tool of a metal-forming unit.



Parts shown above were all formed in one operation. Part in the lower right corner is 5 in. long and 3 in. wide and is formed from 0.010 aluminum (350). The rectangular box (top) was formed from the same material 0.064 in. thick.

Forming Sheet Metal

New Process Forms Polished or Coated Sheets Without Damage

For some time the possibility of improving the finish and accuracy of pressings formed on a rubber matrix press has been the subject of investigation by an American aircraft manufacturing company. Since relatively small numbers of each of a large variety of parts are needed for an aircraft, high tool cost could not be entertained.

The company has now disclosed the development of the process, which in principle consists in the application of a constantly and independently variable pressure to a pressure pad surrounding the punch or male die and gripping the blank, before and during pressing, between itself and the rubber matrix.

As is well-known, in the case of steel draw tool construction, there is a male portion often called a punch, a female portion or die and top and bottom pressure pads. The female portion of the tool can be eliminated in the case of a non-bottoming die, in which case the bottom pressure pad becomes a draw ring. This economy can be made when the shape to be formed is one which clings to the punch. The punch and die portion of the tool are, of course, necessary to define the shape to be made. The two pressure pads are necessary to confine the metal to a flat shape as it enters the die. The flat metal blank used in forming a part must have an area almost equal to the final

outside area of the shape being formed. When the shape to be formed is very deep, it is obvious that a blank of relatively large diameter must be used to form a part of small diameter. In other words, the original outer periphery of the blank must shrink radically in the forming operation. The metal blank, however, has very little rigidity of its own and would, therefore, tend to wrinkle rather than shrink. Such wrinkles would prevent the metal from entering between the punch and the die if allowed to exist. The pressure pads confine the metal to a flat plane as it shrinks from a larger to a smaller diameter. The pressure pads should squeeze the metal just tightly enough to prevent wrinkles from forming, but not any tighter since extra pressure would add unnecessary resistance to the flow of the metal into the die. The pressure required is not constant, however. It varies with the diameter of the blank and with several other factors such as the shape of the part to be formed and the pressure applied on the punch. The pressure is applied to the pads in a steel die either by means of springs or air cylinders in most instances. Springs give a variation of pressure, but the variation is dictated by the springs and not by the requirements of the part. Air cylinders

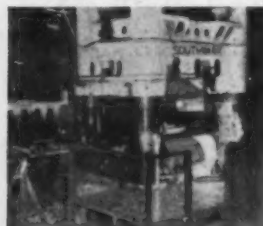
generally give a constant pressure for the full stroke.

A more recent process, on the other hand, is essentially one in which rubber is used as a substitute for the normal metal female portion of the tool; but in which there is no satisfactory substitute for the pressure pads employed in a steel die. Although the process of forming with a semi-fluid medium such as rubber was first experimented with a number of years ago, the process has risen to its present level of usefulness within the past few years. It now is widely exploited in the aircraft industry, since it makes possible a considerable reduction in tool costs on short production runs of applicable parts.

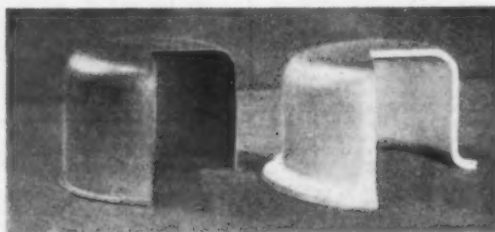
The rubber is contained in a retainer which is mounted on the upper platen of a hydraulic press. A platen is also mounted on the lower bed of the press directly below the rubber retainer. The lower platen is just large enough to match the size of the inner surface of the rubber retainer. The retainer and the lower platen, therefore, form a seal to prevent excessive escape of rubber from the retainer when pressure is applied.

The tooling employed with this process, says an article in "Metal Industry," is extremely simple since it consists only of a male punch. The tooling is even further simplified by the fact that the forming operation

(Turn to page 67.)



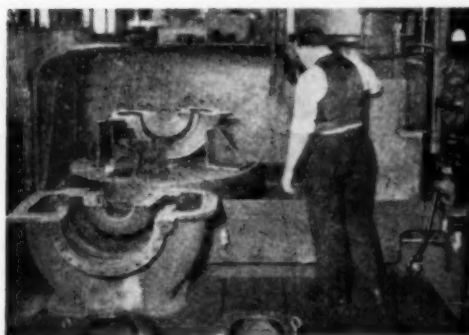
Part coming off the press and sliding into a container (left of press).



Both of the parts above—one of 0.30 in. mild steel (1010) and the other of 0.25 in. aluminum (6180)—were formed on the same tool with a single stroke.



Mating surfaces of two halves of a CI milling machine universal saddle are surface-ground flat and parallel with the ways within 0.0003 in. Pair of saddle halves now requires 50 min. grinding time. Scraping two surfaces together previously required 11 hours.



Joint surfaces on cast-steel turbine casings are finish-ground to a steam-tight condition. Three sizes of casings shown measure 38 and 50 in. across corners. Stock removed from each surface averages 0.005 to 0.010 in.

Grinding Fine Flat Surfaces

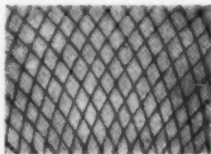
The Importance of Proper Wheel Selection and Technique

Surfaces on production parts can be ground smooth within a few microinches, and flat within one or two light bands. Such operations regularly are carried out on standard rotary-table, vertical-spindle grinders employing hollow-cylinder wheels. They are the same machines used in other applications with different wheels to clean up castings to no exact size.

THESE precision results are being obtained with full chuck-loads of production parts, not just on individual sample test pieces. They are made possible by the application of finishing techniques developed during the war to speed production of ordnance material, and improved later to meet the requirements of producers of commercial appliances for high-quality, fast production at lowest possible cost.

Flat surfaces on refrigerator seals, packing rings, pump parts, and other precision parts are surface ground to meet finish speci-

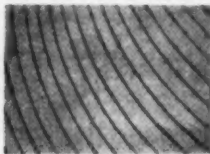
cations of five microinches or less, and flatness requirements measured either in ten-thousandths of an inch or with optical flats. Some users of rotary-table vertical-spindle surface grinders require, in regular production, finishes of 2 mu in. rms, or better.



Crossed wheel marks on the work surface are proof of absolute flatness if they are of equal depth and cross at all points.

A standard machine, grinding hardened steel, has produced finishes as fine as 1 mu in. rms, measured by the Profilometer; and pieces as large as 5 in. dia have checked within 0.00001 in. for flatness. These finishes were obtained with specially selected wheels used under carefully controlled conditions. But it should be noted, writes H. F. Skillings in "The Machinist," that good finishes, from 12 to 20 mu in. rms, can be obtained with coarse wheels if the proper operating procedure is carefully carried out.

Expensive lapping operations can often be eliminated when such precise surfaces are obtained with the surface grinder. In fact, a number of manufacturers of precision parts have abandoned the practice of surface grinding to within a few thousandths of required size, then



Single lines indicate that the surface is slightly concave, a condition caused by the grinding wheel cutting on one side only.

lapping to finish. One manufacturer of refrigerator parts, for example, is surface grinding large quantities of parts, in regular production, to surface accuracies of 2 mu in. rms or better. The best surface previously obtainable on these parts with lapping equipment was approximately 4 mu in. Stainless steel quality comparison blocks are regularly ground to carefully measured ratings of 2, 4, 6, 16, 32 and 64 mu in. rms. Few users of surface grinders ever need to hold more than one or two surfaces to

such close specifications, but the same techniques apply whether one or many different parts are required to be finely finished.

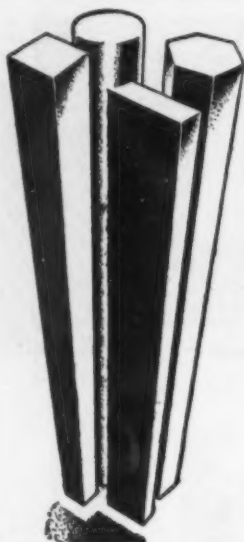
Procedure for precision surface grinding is not difficult. A good operator can become proficient in a short time. The quality of finish depends upon four factors: material and hardness of the workpiece, accuracy and cleanliness of the machine, rate of work speed and wheel feed, and the wheel employed. It also depends upon the skill of the operator during the



Three steel discs taken at random from a chuck-load of 60 pieces show almost perfect flatness and parallelism under an optical flat. Usual precision grinding procedures were followed, and all parts have finishes of 5 mu. in. or better and are of the same height within 0.00001 in.



Steel print wheels, SAE 1010, for business machines, are finish-ground to ± 0.00025 in. Stock removal is 0.006 to 0.013 in. on each side. Chuck holds 113 parts, and 256 parts (452 surfaces) are completed on both sides each hour. Retaining ring keeps parts on surface of magnetic chuck.



Write for the "MARBRITE" PRICE FOLDER, containing full price lists, specification sheets, tolerance tables, etc.

'MARBRITE' BRIGHT STEELS

"MARBRITE" BRIGHT STEEL is manufactured in completely modern plant, to standard specifications, from specially prepared raw materials.

Metallurgically controlled on a commercial basis, through all processes, "MARBRITE" BRIGHT STEEL can be supplied in a wide range of grades and in sizes and sections to suit most needs of manufacture.

The following classes and grades are standard:

BRIGHT MILD STEEL —

- GRADE 1 — Shafting.
- GRADES 1B, 1A — High Tensile Shafting.
- GRADE 2 — Semi-Freecutting Steel.
- EXTRA SUPER — Freecutting.
- LEADER — Freecutting for specialised purposes.
- GRADE CH2 — Case hardening.

PRECISION GROUND —

Supplied in all "Marbrite" Grades, to Standard or Special Tolerances.

BRIGHT ALLOY STEELS —

- "MARBRITE" L5 — 3 per cent. Nickel — Case Hardening.
- "MARBRITE" Q5 — Nickel Chrome — Case Hardening.
- "MARBRITE" L10 — Nickel Molybdenum — Case Hardening.
- "MARBRITE" Q7 — Nickel Chrome — High Tensile.
- "MARBRITE" R4 — Nickel Chrome Molybdenum — High Tensile.

AIRCRAFT STEELS —

To Standard Specifications

"MARBRITE" Rounds, in Grade CH2 and other suitable grades, can be supplied oversize to provide for grinding, after heat treatment.

Special Sections — A comprehensive range is available against order.

Precision ground bars are manufactured to Standard tolerances with a wide range of Round sizes from 1in. to 6in. diameter. Table A tolerances are within +.000—-.002 down to within +.00025—.00025.

PLAN YOUR PRODUCTION WITH "MARBRITE" BRIGHT STEELS

GEO. H. MARTIN PTY. LTD.

"MARBRITE" BRIGHT STEELS

"Marbrite House"

Telephone: MJ 4341

SYDNEY, N.S.W.

32-38 Bathurst Street

Telephone: MJ 4341

critical sparking-out portion of the grinding cycle.

HARDNESS IS IMPORTANT

Area of surface being ground, the material from which the workpiece is made, and its hardness, affect the finish obtainable. Hard steel surfaces can usually be finished to 2 mu in. rms or better if desired, while soft steel and cast iron seldom can be finished finer than 5 mu in. Finishes finer than 10 to 12 mu in. rms are difficult to obtain on brass, while aluminum surfaces seldom can be finished finer than about 15 mu in. rms.

To produce truly flat surfaces, the grinder head is adjusted to show a cross wheel mark when the work is finished. The presence of these two sets of criss-crossing curved marks, if they are of equal depth and cross each other at all points, is proof of flatness of the entire surface if tests show any portion of the surface to be flat.

Likewise, if all workpieces in a chuck-load show these marks, and one piece is shown by tests to be flat, it is certain that all of the parts in that particular lot are flat within the same limits.

We specialise in the production of
WOODEN HANDLES
for Hand Tools, Brushes, Toys, Kitchenware, Rubber Stamps, also Cores, Beads, etc.
DELTA WOODTURNING CO.
Duffy Avenue, Thornleigh, N.S.W.
Tel.: JW 3201

Likewise, if all workpieces in a chuck-load show these marks, and one piece is shown by tests to be flat, it is certain that all of the parts in that particular lot are flat within the same limits.

For finely finished, precisely flat surfaces, the machine must be in good condition, and must be cleaned of all loose abrasive grains and other foreign material. In addition, the magnetic chuck must be ground flat with a finish showing the criss-cross marks of a truly flat surface. If the top surface of the chuck is not flat, the workpiece surfaces will not be ground flat. Best practice, when much fine finishing is to be done, is to reserve one machine for finishing. Other machines are used for grinding the surfaces to within a few thousandths of required size, and the parts are transferred to the finishing machine for final sizing.

Grinding must not be hurried. Wheel face should be dressed sharp, wheel pressure must be light, and worktable speed selected to suit the wheel and the work. Selection of the proper grinding wheel is essential. Grits from 80 to 220 are used for fine finishes. In general, the silicon carbide abrasive, being the most friable, is the best grain to use irrespective of the material being ground. However, for some materials, the brown unrefined aluminum oxide or the white highly refined aluminum oxide in the 80 to 100 grit sizes have been found to give the best results. The harder the material and the broader the surface to be ground the softer the grade required. In the case of extremely hard materials, like the cemented carbides, sapphires, and some ceramic materials, a diamond wheel is required.

OPERATING PROCEDURE

Good finishes usually can be obtained with medium grain wheels by using this procedure:

When final size is approached, continue grinding for several turns of the chuck without downfeed of the wheel. After sparking-out is completed, raise the wheel by hand from 0.001 to 0.002 in. very slowly. This will give a finish of 15 to 20 mu in. rms on hardened steel with a 24-grit wheel, or on soft steel with a 46-grit wheel.

Follow the same procedure when using a fine-grit wheel for fine finishes. A free-cutting wheel is essential, as wheels as fine as 220

(Turn to page 54.)

75 YEARS OF EXPERIENCE

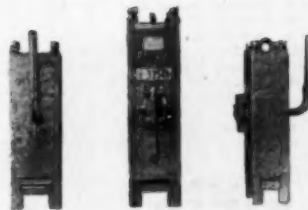
IN GENERAL AND STRUCTURAL ENGINEERING



Full Tyne Heavy Dredging Grab made for Maritime Services Board.



Hydraulically-operated Plywood Press for use in timber mills in Queensland.



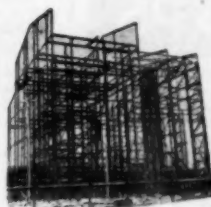
Steam-driven Pile Hammers.



Ore Grabs built for B.H. Pty. Ltd. Manufactured up to 18 tons capacity.



Section showing Skip Hoist and Weighbridge Conveyor Steelwork for the French Nickel Co., New Caledonia.



Steel Construction of Sulphuric Acid Plant for Sulphide Corporation, N.S.W.



Overhead Electric Travelling Cranes have been manufactured for use in all parts of Australia, India and New Caledonia.

MORISON & BEARBY LTD.

ENGINEERS, NEWCASTLE

Cable Address: "MORISON," CARRINGTON, N.S.W. Code: BENTLEY'S. Telephone: M 2247 (3 lines)

Highlights on Machine Tool Front

(By Noel Spence, Engineering Manager, Electronic Industries Imports Pty. Ltd.)

An English firm, making American milling machines in U.K. under licence, is now producing models, which the original American designers, and manufacturers admit are superior in several ways to their own original models.

Another English firm is now the only manufacturer turning out Maddison Kip type die-casting machines, which were originally designed and produced only in the United States.

Horizontal boring machines and capstan lathes turned out in France, have excellent performance and are available on much shorter delivery than from England.

These are the news highlights of the author's recent tour of England, the Continent and the United States of America, during which he inspected some 90 odd factories and covered 70,000 miles, mostly by air.—Editor.

ONE of my missions was to see what was going on in the machine tool industry—to check up on new developments in manufacture and to investigate any new techniques being employed by users of machine tools overseas.

It was at the C.V.A. works at Hove, near Brighton, that I discovered that American Milwaukee milling machines, being manufactured there under licence, were admitted to be superior to the same machines being produced by the original designers and manufacturers in the U.S.A.

I was told that the admission had been made by a representative of the American manufacturers during a visit to the C.V.A. factory.

He admitted that the production methods in England were superior in a number of respects to those still employed in America and that some of the ideas originated by C.V.A. had actually been adopted by the American firm. He also declared that the English product was equal if not better in finish than the American.

Whilst in America, out of curiosity, I visited the Milwaukee factory and the statements made to me in England were confirmed by the factory's officials.

Incidentally, production costs on these machines are lower in the U.K. than in U.S.A.

C.V.A., as you may know, is one of the most versatile manufacturers

in England. It was originally formed in 1936 to manufacture jigs, moulds and press tools, but now it has switched its production completely and is turning out a wide range of machine tools, which are recognised as among the best being produced in the country.

Among other items, C.V.A. is turning out high production dieing presses, precision tool room machines and automatic lathes.

C.V.A. is turning out tool room equipment of the Thiel type such as punch shaping machines, band saw and filing machines, high production tapping machines and a small tool room precision lathe, which is one of the best jobs of this type I have ever seen.

I saw one of these little lathes being demonstrated to a prospective client and the test it was put through was most exhaustive.

Although it is only a 6-inch centre lathe, during the test it was given the job of taking a quarter-inch cut on a two-inch pre-cutting mild steel bar, 18-inches long, over the entire length, with the spindle revolving at 3,000 r.p.m. and at its maximum rate of feed.

The machine was fitted with a tungsten carbide tipped tool with a negative rake. After the cut was taken the bar was measured over a foot and showed no discrepancy whatsoever.

This, I think, would be one of the toughest tests that a machine of this type could be put to.

A second cut was taken as a finishing cut, with the spindle still revolving at 3,000 revs and the saddle at its slowest rate of feed. The finish obtained under this test was almost equal to that of a ground finish.

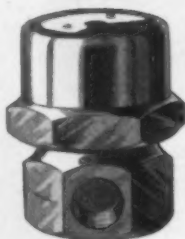
I do not think that the average Australian manufacturer realises the potentialities of a punch shaper. Practically every overseas manufacturer making dies, etc., is equipped with one of these machines.

The design is of German origin. The latest machines can be held to very close limits and, in several factories where I saw them being operated by skilled tradesmen, the die sets did not need further cleaning up after being through the punch shaper.

At the Rockwell Machine Tool Coy's works at Wembley, near London (another factory I inspected) they are manufacturing United States designed press feed equipment. This equipment enables a standard, vertical or horizontal, press to be converted into an automatic cycle machine.

I understand that there is already some of this equipment in use in Australia. It cuts out the human element in ordinary press working, thereby giving a greater production from the press. It also cuts down labour costs. Several factories I visited in England and America which had batteries of standard presses fitted with this equipment, employed only one operator.

STEAM TRAPS



LATEST DEVELOPMENTS

- Traps manufactured completely from Bar Stock, effecting **LOWEST** cost.
- Complete replacement of the **ONLY** moving part and seat at minimum cost without removal from line.
- Widest operating range (2-250 lb. sq. in.) without adjustment.
- Highest condensate capacity over range.

LITERATURE ON REQUEST

TOROID INDUSTRIAL SUPPLIES Pty. Ltd.

528-530 Collins St., Melbourne, Aust.

Phones: MB 2374 and MB 2375

INTERSTATE DISTRIBUTING AGENTS:

SYDNEY: Toroid Industrial Supplies (N.S.W.) Pty. Ltd. MX 2848. BRISBANE: W. E. Peterman & Son, phones B 2088-9. PERTH: McLean Bros. & Riggs Ltd. LAUNCESTON: Douglas & Fraser.



REMEMBER !

TALOIL INDUSTRIES PTY. LTD.

Are Manufacturers of

**DISTILLED
OLEIC ACID — STEARIC ACID
GLYCERINE
MIXED FATTY ACIDS**

276 BUNNERONG RD., MATRIVILLE, N.S.W.

Phone: FJ 2841

rator for every four or five machines. Of course, one of the big advantages of using press room equipment is the fact that your press can function as an automatic cycle, or manually operated machine as required.

I dropped in on Henry Berry's of Leeds to have a look at their hydraulic press equipment in production. Berry's do a lot of work for all the major railway systems. The presses they make range from one ton up to 1,000 tons capacity and they pride themselves that they are prepared to quote on any type of hydraulic equipment for any country in the world.

As you may know Maddison Kip Die-Casting Corporation, of Wisconsin, U.S.A., no longer manufactures die-casting machines, so the only firm left in the field now is the English concern, William Coulthard & Sons, of Carlisle, on the Scottish border who are making them under licence from Maddison Kip.

Coulthard's have put a lot of time into re-designing these machines and it is agreed, both in the States and England, that the machines they are turning out are superior to the original models of American manufacture. They are meeting with a ready sale in the States as well as in England.

The machines Coulthards are turning out range in operation from 1½ lbs. in zinc up to 3 lbs. in aluminium. One of them is of complete automatic cycle.

Coulthards also produce their own die-castings. They originally went into die-casting to demonstrate their machines to buyers and now their die-castings are in great demand.

In France I visited the French Association of Machine Tool Manufacturers, who trade under the name of A.F.M.O. These people represent all major machine tools manufacturers in France.

Among the machine tools I saw being made in French factories were horizontal boring machines, capstan lathes, grinding machines, engine lathes and railway rolling stock. I was struck by the high quality.

Horizontal boring machines and capstan lathes have been difficult to obtain in Australia and as the French models are very short delivery there should be an opportunity for increased trade in these items in the near future.

In my opinion France will be one of the largest producers and exporters of machine tools in Europe before long. They are extremely keen to trade with us and their production is undoubtedly very high.

French prices are a little higher than English, but they are competitive with other European countries and the short delivery is a big factor that will weigh with manufacturers in urgent need of new machines.

I visited Germany and Sweden, during my tour, but there is nothing much to report from these countries on the machine tool front.

In Germany the chances of early trade with the Western zone are practically ruled out, for the time

CLOSE WORK NEEDS LOW SURFACE BRIGHTNESS, YET . . . HIGH LEVEL ILLUMINATION



Save Eyes, Speed Work with CLAUDE COLD CATHODE

The human eye is industry's most critical control device. Good seeing conditions are, therefore, just as fundamental to good work as good tools, machines and equipment.

To-day, Claude Cold Cathode Fluorescent Lighting is regarded by progressive management as a production tool designed to promote product quality as well as rate of output.

For restful vision, the eye needs low surface brightness at normal

vision levels . . . even light distribution with absence of shadows and glare . . . a comfortable detail-revealing illumination level on all working planes with good colour discrimination.

There are other tangible benefits, too—lower lighting costs, low maintenance. Your nearest Claude office will be happy to tell you the full story and give details of the Claude Rental Plan, which avoids necessity of incurring capital expenditure.

FLUORESCENT
LIGHTING

NEON
DISPLAYS

PORCELAIN
ENAMEL

CLAUDE
NEON LIMITED



SYDNEY • NEWCASTLE • MELBOURNE • BRISBANE • ADELAIDE • PERTH • HOBART • LAUNCESTON

solvent extraction problems?

I.C.I. CHLORINATED SOLVENTS ARE THE SOLUTION!

	for the extraction of
Dichlorethylene	OILS
	FATS
Trichlorethylene	WAXES
	RESINS
Perchlorethylene	VITAMIN OILS
	WHALE OIL
	and a host of other materials

In the complete range of I.C.I. chlorinated solvents is the answer to your solvent extraction problem. For information and advice simply contact I.C.I. Technical officers of your state branch. I.C.I. chlorinated solvents are non-inflammable, and among their new uses is the important extraction of whale oil.

Take advantage of I.C.I. service to industry. Ring, write or call, simply stating the details of your problem.

IMPERIAL CHEMICAL INDUSTRIES OF AUSTRALIA AND NEW ZEALAND LTD.

408 LATROBE STREET, MELBOURNE

251 GEORGE STREET, SYDNEY

193 QUEEN STREET, BRISBANE



I.C.I. (N.Z.) LTD., AUCKLAND

AND WELLINGTON, NEW ZEALAND

Agents: Elder, Smith & Co. Ltd., South Australia and Western Australia;
Chemical & Textile Agencies Pty. Ltd., Tasmania

SEX-1-K-654

IMPORTED STEEL

SHEETS (Deep Drawing, Bk., Gal.)
M.S. AND BOILER PLATE
JOISTS, CHANNELS, ANGLES
REINFORCING RODS
PIPING (Bk. and Gal.)
BRIGHT STEEL SHAFING
WIRE & WIRE NETTING
ASBESTOS CEMENT SHEETS & PIPING

REFINED PIG IRON

Standard sizes and gauges can be offered for early shipment from overseas

PRICES REASONABLE

ENQUIRIES INVITED

Hurley & Dewhurst Pty. Limited

WINGELLO HOUSE, ANGEL PLACE, SYDNEY, N.S.W.

Telegrams: "DEWLEY," Sydney

Phone: BL 2363

J. Gadsden Pty. Ltd.

Manufacturers of

PRINTED, AND PLAIN
CANS. — STEEL CON-
TAINERS. ALSO, CANVAS
GOODS, CALICO AND
HESSIAN BAGS

Factories at

AUSTRALIA—
Melbourne, Sydney, Adelaide,
Fremantle, Hobart and Albury.
NEW ZEALAND—
Wellington, Christchurch, Auc-
land, and Dunedin.

Head Office — Abbot'sford Street, West Melbourne.

being at least, because of dollar restrictions. The Eastern zone, on the other hand, is in the soft currency area and is eager to do trade with Australia. It is still in the throes of reconstruction and I don't expect that any large quantities of equipment will be available for some time.

Production is quite high in Sweden, but so is taxation—a fact which is causing concern to the manufacturers. However, some Swedish firms are still meeting orders at competitive European prices.

My visit to U.S.A. was mainly exploratory and to see if I could pick up any new ideas. Of course, what we can buy in the way of machine tools from that country is determined solely by the dollar shortage and even though America is turning out machines and equipment we could use, we are not in a position to buy much from her.

but with only light pressure. To give best results, dress with a silicon carbide stick, holding the stick against the face of the wheel as it idles down to a stop. Round the inside and outside corners of the wheel to about 1/16-in. radius to obtain the best finishes and eliminate occasional scratches.

When grinding large steel plates which must be accurately flat and parallel, it is good practice to raise the wheel just before size is reached, dress it, then feed the wheel down to the work by hand, removing 0.001 to 0.002 in. stock from the plate and leaving a cross-hatched marking over the entire surface. The crossed wheel marks will indicate that there are no low spots in the surface, and if the magnetic chuck has been ground flat, the sides should be parallel after both sides have been ground in this manner.

If a large plate is ground in a location which is off-centre on the magnetic chuck, the above procedure should be used. In addition, if the plate is of hardened steel or a hard, tough alloy, two diagonal lines should be "coppered" on the plate, connecting the extreme corners. Then, after the wheel is dressed, the surface is ground lightly until the copper is removed from the entire surface when the wheel just barely touches the work. Copper sulphate crystals dissolved in water with one or two drops of any acid makes a good coppering solution.

When using wheels of 46-grain

grit are quite dense; a wheel too hard for the job will tend to heat the work, and will not produce the results possible with a freer-cutting wheel. With wheels of 100 grit or finer, use the regular wheel dresser occasionally, if necessary,

Grinding Fine Flat Surfaces

(Continued from page 50.)



MALLORY 73 BERYLLIUM COPPER

High Tensile Strength — Great Hardness — Good Electrical Conductivity — Resistance to Corrosion — Beryllium Copper offers an exceptional combination of Electrical and Physical properties — its resistance to wear and abrasion and freedom from atmospheric corrosion are valuable for application to a wide range of precision machinery.

Available on indent orders from our Associate London House as sheet, strip and wire in a wide range of tempers; also in rod, tube precision rolled hair spring strip and silver faced contact bi-metal strip. Further particulars on application.

This manual free on request.

A limited number of these manuals on "Beryllium Copper, its Properties and Applications," are available for Australian circulation. If you desire a copy, please write on your company's letterhead for same.

**GARRETT, DAVIDSON
& MATTHEY PTY. LTD.**

Offices: 824 George St. Sydney — MA 4461-2
Works: Surry Hills & Chippendale, N.S.W. PAS145

Associate London House: JOHNSON MATTHEY & Co. Ltd. Holton Garden.

size or coarser, use downfeeds of 0.012 to 0.036 ipm, depending on the material being ground and the area of the surface. Coarser-grit wheels for softer material will allow more rapid downfeed rates, but when finer-grit wheels are used the rate of downfeed should be reduced. To improve the finish produced with coarser-grit wheel, the final finishing can be done with the lowest table speed. However, with fine-grit wheels, the highest table speed in recommended as the high speed allows the work to pass under the wheel fast enough to eliminate danger of overheating.

PROCEDURE FOR FINE WORK

When work surfaces are to be ground to very close specifications for size, parallelism, flatness and finish, this procedure has been found best:

The magnetic chuck is carefully finished flat, and checked with a straightedge. Parts are loaded around the periphery of the chuck to leave a generous opening at the centre. The first side of the pieces then can be ground, using procedures outlined above. Then the pieces are unloaded and cleaned carefully. The surface of the magnetic chuck is stoned with a medium-grade India oilstone, and the chuck is cleaned. Then pieces are reloaded in inverted position for grinding the second side. Hand stoning and careful cleaning of the chuck face is important at frequent intervals to remove any burrs or bumps which may develop while handling the workpieces.

HONORARY DEGREE FOR JAMES F. LINCOLN.

Five distinguished Americans, including two educators, a political scientist, an economist and an engineer-industrialist, received honorary degrees at the Spring Quarter commencement exercises of Ohio State University, Columbus, Ohio according to President Howard L. Bevis.

Among the recipients were two alumni of the University—James F. Lincoln, President of the Lincoln Electric Company, Cleveland and Dr. William Vermillion Houston, President of Rice Institute.

Mr. Lincoln, who received the degree of electrical engineering from Ohio State in 1926 is a former member of the University's Board of Trustees. One of America's best-known industrial leaders, he is famous throughout the world for his work in labour management relations and for his engineering skill in applying technical advances to useful purpose.

Mr. Lincoln has just returned to America after a short visit to New Zealand and Australia.

NEW W.A. PREMISES FOR A. HANNAFORD & CO. LTD.

Mr. Alf Hannaford, managing director of Alf. Hannaford and Co. Ltd., Woodville (S.A.), and Mr. A. R. Carmichael, director, visited the company's Western Australian branch, where they opened new premises at Belmont.

C.B.D.



1ST.

FOR FINE IRON CASTINGS

First for reliability and value... for freedom from casting flaws and defects... for their abrasion and shock-proof features... for their easy-to-machine qualities... for the use of finest available materials and time-tested craftsmanship... for pistons, repetition work, compressor parts, stationary engine components and machine tool castings.

C.B.D. PISTON CO.
370 DRYBURGH ST., NTH. MELBOURNE
Telephones: F12527, F12530

Australasian Representatives:
JOHNSTON & GASTON PTY. LTD.

MANUFACTURERS

Do your products look as good as they are?
— are they appealing to the eye?

If not—Let our artists design a colourful
decoration with an arresting trade mark!

Then—Watch the sales curve rise!

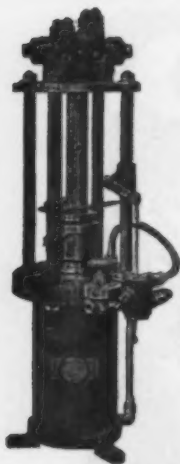
TRANSFERS

by
**SELEX
DECAL**
MANUFACTURING LIMITED

MELBOURNE CMT 1267
BRISBANE 9 4301
* SAULCASTON 1045

SYDNEY MA 2409
ADELAIDE CMT 8434
PERTH 9 3050

FOR WOOD METAL PAINT PLASTICS GLASS ENAMEL LEATHER



HYDRAULIC PRESSURE from your AIRLINE...

with the AIRHYDROPUMP

For TESTING all types of castings, pressure vessels, gas cylinders, etc. **PRESSURE MAINTAINED AUTOMATICALLY.** Provides a small supply of liquid at any desired pressure up to 22,500 lbs. per sq. inch. Single acting and double acting models in 34 ratios. Write for literature. Illustration shows single acting model.

Agents in all States. Manufactured by
CHARLES S. MADAM & CO. LTD., England.
Australian Agents:

H. C. THORNTHWAITE & CO.
43 Margaret Street, Sydney. BX 3603

MECHANICAL SORTING EQUIPMENT

Wholly Made in Australia in Sizes to Suit Either the Smallest or the Largest Office.

FAST, ACCURATE AND SAFE!

Is Simple, Inexpensive, Eliminates Drudgery and
Releases Time for Important Work

Fastest office system ever devised for arranging documents, letters, records, etc., in any desired order. More than 2,700 Systems operating in Australia with complete success.

The **Sorter-Graf Co.**
G. BLAKE

Manufacturers and Suppliers of Sorter-Graf Systems
and Equipment. Demonstrations Free.

WARWICK BUILDING, 15 HAMILTON STREET, SYDNEY

AGENTS IN ALL STATES.

Tel.: BW 7332.



PATENT & TRADE MARK NEWS

Complete specifications lodged with the Patents Office are open to public inspection almost immediately after their lodgment. Interested persons are now able to obtain the details of an invention for which protection is being sought.

Provision is also made (Patents Act, 1946) for an applicant to obtain damages, if infringement occurs, from the date of publication of the application. A rule of practice has been established whereby an application will be examined more speedily when a prima facie case of alleged infringement is proved.

Particulars of the necessary procedure will be supplied by any Patent Attorney practising in the Commonwealth.

PATENT SPECIFICATIONS ACCEPTED

HARVESTER COMB EXTENSIONS.

127,302.—G. H. Eddy, N.S.W.

To save those crop heads which fall forwards from the knife, extensions extend forwardly and curve upwardly and rearwardly so that their free ends are between and in the plane of the teeth. The extensions may be permanently or detachably secured and may be crimped so that they are saw-toothed in vertical planes.

COLLAPSIBLE SHOE LASTS.

127,320.—The British United Shoe Machinery Co. of Aust. Pty. Ltd., Vic.

To provide a stronger connecting means for lasts used in making large and heavy shoes, a two

part collapsible last has a fore part and heel part; a relatively long link pivotally connected, a looped portion embracing an inverted toggle device pivoted occupying kerfs and adjacent bearing surfaces within the looped portion co-operate to provide a face joint. A passage is provided in the heel part communicating with the kerf into which an implement for actuating the inverted toggle device may extend.

In a modification the joint portions of the two parts of the last have corresponding ridge and valley adapted to locate the last in last-forming relation.

SUPPORTING MEANS FOR BAG LOADER.

127,370.—Peters Bros. Wade & Allison Pty. Ltd., N.S.W.

Transportable supporting means for the frame of a bag loader or the like, which latter is supported from a vehicle, has pivot-

ally fitted demountable cross-heads with pins in brackets and a wheel fitted to a trailing or trailable supporting frame whose outer ends are jointed to a platform by means of stay bars. Means to hold the supporting mechanism in uplifted position when not in use as a trailing frame, comprise a pair of holed angled brackets, adapted to detachably receive securing pins through their centre holes.

THE MANUFACTURE OF TAMPONS.

127,363.—Johnson & Johnson Pty. Ltd., N.S.W.

An automatic machine for the manufacture of tampons comprises means for coupling a draw string to a length of tampon material, and means for forming the combined draw string and tampon material into a finished tampon coupled with a draw string, the various means being

operable in timed relationship.

Tampon strip material from a spool not shown is fed through a folding device and rollers to, and is cut into lengths by, a blade, the lengths of material then passing to a reciprocating feeding table to be fed in successive stages past a string placing and looping device, a loop tightening device co-operating with a lever, and then to a die charging stage where the combined tampon material and draw string is pressed into a die on a turret by a plunger. Further compression of the material is carried out by plungers when the turret rotates to each position, to form a finished tampon which is transferred to an applicator in a turret and discharged to a table for

PATENTS, TRADE MARKS, DESIGNS AND COPYRIGHTS

AUSTRALIA AND OVERSEAS

GRIFFITH, HASSEL & GRIFFITH

PATENT ATTORNEYS—EST. 1899.

Adelaide House, 67 York St., Telephone
SYDNEY, N.S.W. BX 2848

PHILLIPS, ORMONDE, Le PLASTRIER & KELSON

ESTABLISHED A.D. 1888

CECIL Le PLASTRIER. GEOFFREY SLY. BERTRAM C. FITZPATRICK.

TRADE MARK AGENTS — PATENT ATTORNEYS

PROVIDENT LIFE BLDG., 37-41 QUEEN ST., MELBOURNE

Telephone: MB 2594 (2 lines)

Osborn F. Cartwright

PATENT AND TRADE MARK
ATTORNEY

350 George Street, SYDNEY

Telephone: BL 1894

Fellow Institute Patent Attorneys of
Aust., Inc.

T. MAIN & SONS PTY. LTD.

EST. 1860

Lambert and Baker Streets,
North Richmond, E1, VICTORIA

GENERAL IRONFOUNDERS

CUPOLA MANUFACTURERS PATTERN MAKERS

WE SPECIALISE IN:

Machinery, Refrigerator, Chilled Rolls, Semi-Steel and Nickel Chrome Castings, Diesel Engine Castings in High Grade Alloy Irons, Ni-Resist, Ni-Tenayl High Duty Irons up to 30 Tons Tensile.

SOLE AUSTRALIAN AGENTS FOR

BALANCED BLAST CUPOLA

Phones: JA 4113, JA 4114.

packing. The various steps are performed in timed relationship by appropriate cams, gears, and eccentrics driven by continuously rotating shafts and intermittently rotating shaft.

PETROL DISPENSING INDICATING MECHANISM.

137,359.—E. E. L. Products Ltd., N.S.W.

Petrol dispensing indicating mechanism of the type having two pointers, one of which registers one gallon per revolution and the other registering up to twenty gallons, provides a hand-operated zero setting mechanism which effects locking of a starting lever to prevent restarting until the zero is reset, and comprises a driven crown wheel and reduction gears, which are respectively connected to a gallon

pointer shaft and a total gallonage sleeve by clutches upon rotation of cams by one lever of a duplex lever system coupled to a starting lever. The second lever of the duplex meanwhile holds disengaged a dog clutch on zero setting handle. Manual stopping of the mechanism permits a spring-tensioned lever to interpose above a stop on the starting lever to prevent restarting, and is only retracted when the zero setting mechanism, returning both pointers to zero in one revolution, due to pawl, causes a stop to engage a three-armed bell crank which moves the lever clear. Automatic stopping may be utilized upon dispensing the full amount whereupon activation of the bell crank by the stop liberates a secondary spring-tensioned lever system connected to switch control means.

DOWELLING MACHINE WITH TWO CUTTER HEADS.

137,354.—L. P. Walker, W.A.

A machine that has two relatively separated cutter heads fitted with contoured knives, the one head simultaneously fashioning one part of each of a plurality of dowels, and the other fashioning the remaining part of the dowels has in association therewith a dowel guide member, the latter being characterized in that it has a sloped face in proximity to the radial path of the cutting edge of the knives on the cutter head and another sloped face on the underside in proximity

Portable Power

For ALL Industrial Purposes

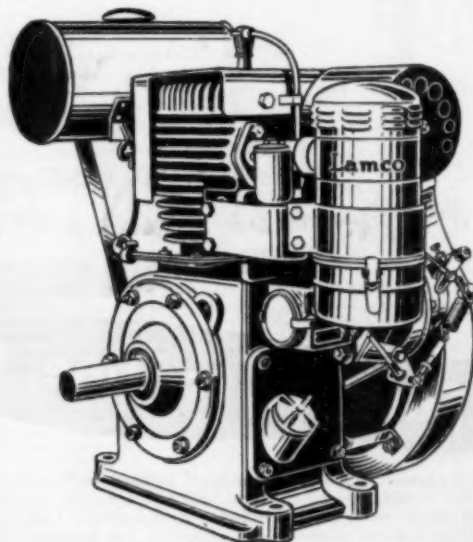
"DOUGLAS"

BRITISH MADE

FORCED AIR-COOLED

PETROL ENGINES

IN 3 SIZES FROM 5 TO 7 3/4 H.P.



The "Douglas" is a portable, reliable 4-stroke, air-cooled engine that can be used for dozens of jobs . . . pumping, sawing, spraying, air-compressors, tractors, etc. Easy starting model. Amal carburettor and Wico impulse magnets ensure easy starting under the worst conditions.

TYPE	H.P. AT 2,000 R.P.M.	BORE	STROKE	WEIGHT
Single Cylinder	5 1/2	3" (76.2 mm.)	4"	204lb. (93.4kg.)
	6 1/2	3 1/4" (82.5 mm.)	(101.6 mm.)	205lb. (92.9kg.)
Side Valve	7 3/4	3 1/2" (88.9 mm.)	all sizes.	202lb. (91.4kg.)

WRITE FOR LEAFLET AND DETAILS

Distributed by

LAMINATED BELT CO.

106 COMMONWEALTH STREET, SYDNEY

Phones: MA 2413 and MJ 4678-9

IMPORTERS OF
ANILINE DYES
DRY COLOURS, OXIDES
CEMENT COLOURS
WHITING, ALUMINIUM
AND BRONZE POWDERS

HODGSONS DYE

AGENCIES PTY. LIMITED

248 Sussex St., Sydney, N.S.W.
Seaside House, Dawkins St.,
401 534 Flinders St., Melbourne.
Maritime Bldg., Brisbane, Qld.
Wallingford, N.Z.

"ZERISTO" CORK and "SILEX" ASBESTOS
BLACKWOOD STREET,
NORTH MELBOURNE.
F 2055, F 8452.

W. H. Brewer Pty. Ltd.

INSULATION



Sure it's routine, but . . .

Even routine work can deteriorate if lighting conditions are wrong. Production can slip even in the simplest operations; errors and omissions can cause administrative delays and confusion. For many years past, Philips—through their Lighting Service Bureau—have carefully investigated and checked this problem . . . the problem of enhancing efficiency and increasing production through correct illumination. Figures have shown that Philips planned Fluorescent Lighting is decreasing absenteeism, pepping up efficiency as well as improving employee (AND employer) morale.

Philips Fluorescent is easy to instal, it's economical to operate and it's designed for easy servicing. Whether your problem is big or small, Philips Lighting Service Bureau will gladly provide you with free advisory service covering costs, layout planning, best equipment types, etc. Just 'phone or write to your nearest Philips Lamp Agent or the Philips office in your State. No obligation.



PHILIPS FLUORESCENT
LIGHTING

PHILIPS ELECTRICAL INDUSTRIES OF AUSTRALIA PTY. LTD.

SYDNEY:
Philips House
69-73 Clarence
Street

MELBOURNE:
590 Bourke St.

BRISBANE:
Reid House
148 Edward St.

ADELAIDE:
Wyatt House
119 Grenfell St.

PERTH:
381-5 Murray St.

mity to the radial path of the cutting edge of the knives on the lower cutter head, and is also provided with screws arranged at the discharge end to groove each dowel.

CARD INDEX DRAWERS SUPPORT.

137,355.—E. T. Brown Ltd., Vic.

To provide resistance to tipping throughout the entire travel of an index drawer a single suspension arm is positioned beneath the drawer (and equi-distant or approximately equi-distant from the sides of the drawer) and which slidably engages a fixed slideway secured to the base of the cabinet means such as a projection being provided on the drawer to engage the suspension arm and to draw it outwards during portion of the opening movement of the drawer and means such as a flange is provided, also on the drawer, to engage the suspension arm to push it inwardly during portion of the closing movement of the drawer.

DOUGH DIVIDING AND ROLLING APPARATUS.

137,340.—J. Knight, Vic.

To eliminate hand rolling of dough pieces in the manufacture of buns, a series of vertical knives or cutters cut the dough into strips and a rotating cutter divides the strips into individual pieces which are rolled to the shape required between a moving apron and rollers.

PRODUCT OF CONDENSATION.

137,290.—Imperial Chemical Industries of Aust. and N.Z., Vic.

A process for the manufacture of water-soluble products useful for the production of glazes and/or shrink- and crease-proof effects on textile materials comprises heating under neutral or alkaline conditions an aqueous solution of formaldehyde with one or more polyureas containing at least three groups of the general formula—NCO NH₂ wherein R is hydrogen or a short chain alkyl group, said groups being separated from one another by hydrocarbon chains containing at least two carbon atoms.

COUNTERBALANCED EQUIPOISE MECHANISM.

137,284.—W. P. Iggliden, Vic.

To provide an equipoise mechanism in which only one counterbalancing spring unit is used a hollow arm pivotally connected to a mounting carries pivotally at its upper end a housing to which is pivoted an arm holding the object to be equipoised.

The spring unit, the lower end of which is attached to the mounting at a point spaced from the pivot point, is contained within the arm and has its upper (Turn to page 60.)



FIXED and ADJUSTABLE TYPES

in sizes for EVERY Industrial electrical requirement.

Built to stand overloads, intense heat, dampness—even salt water immersion—these unique IRC Coated Power Wire Wound Resistors are unexcelled for long, trouble-free performance, even under the most exacting conditions.

Because of the many different types of service which power type resistors must meet dependably, these IRC units are available with three types of coatings which will meet all requirements fully. They offer EXTRA PROTECTION against the most common causes of resistor failure.

Engineering Brochure
available on request

POWER WIRE WOUND

SOLE AGENTS FOR AUSTRALIA:

Wm. J. McLellan & Co. Pty. Ltd.

BRADBURY HOUSE, 55 YORK STREET, SYDNEY. Phone: BX 2508

RESISTORS

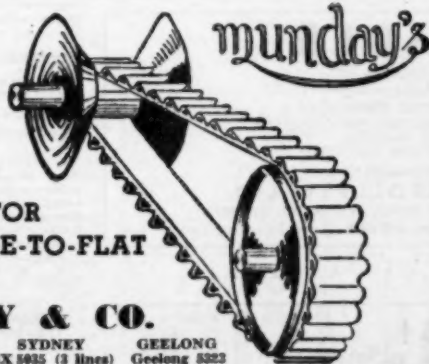
MUNDAY'S

FOR
VARIABLE
SPEED DRIVES
"RIPPLE"

LEATHER BELTS FOR
VEE-TO-VEE & VEE-TO-FLAT
ARRANGEMENTS.

JAS. MUNDAY & CO.

MELBOURNE SYDNEY GEELONG
Phones: MU 0015 (4 lines) BX 5035 (3 lines) Geelong 5323



SERVICE

YOU SAVE WITH SEBCO

We can prove it!

FREE DEMONSTRATION ON YOUR OWN JOB!

It costs you nothing to let a Sebco Engineer demonstrate - on your own job - how Sebco anchoring methods save labour and material and speed up your production at one and the same time. Demonstrations, Cost comparisons, Dynamometer tests, anchors and drills - all are furnished free at your request to show you how Sebco Masonry Anchors will do a better job than other forms of anchoring. There are five different Sebco Anchors that do every anchoring job - from the affixing of heavy machines into concrete to the attaching of fixtures into plaster sheeting or any other light material. Contact Ogden Industries Pty. Limited.

SEBCO

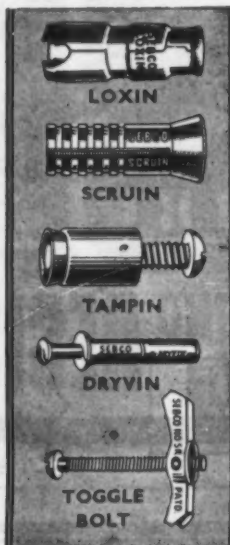
EXPANSION
MASONRY
ANCHORS



BRISBANE

OGDEN INDUSTRIES PTY. LIMITED

SYDNEY MELBOURNE ADELAIDE PERTH
HOBART and LAUNCESTON



TIMBER!

Supplies of

- CASE TIMBERS
- HARDWOOD SCANTLINGS
- PINE SHELVING AND FLOORING
- FENCING MATERIAL
- PALLETS AND PLATFORMS

Obtainable from

SMITH BROS. PTY. LTD.

767-775 BOTANY ROAD, WATERLOO, SYDNEY

Telephone: MU 2241 (5 lines)

ENGINEERS!

"We Give You the Tip" →

The famous brand "Wimet" Tungsten Carbide tips and tools

Now Available from Stock

Australian Agents:

THOMPSON & WILLIAMS

28 MARKET STREET, MELBOURNE

Telephones: MB 2121, MB 2122.

(Continued from page 58.)
end connected to a crank like extension of the upper arm by a flexible link. A link is arranged to connect the mounting with the upper housing at a point which may be on a projecting lug. The spring unit may consist of a single spring or a pair of springs coupled, and may be anchored to a point above the pivot point of the lower arm. The mounting may be swivelly attached to a base or a bracket and the flexible link, which may be a chain, may be engaged by surfaces on the arm.

FLOAT VALVE COUPLED TO PIVOT PIN.

137,286.—M. T. Philipps, S.A.

To simplify manufacture and provide adequate bearing surface for the pivot pin of an arm to which the float is coupled to operate a valve, a ball is provided on the operative end of the pivoted arm and a cylindrical bore neatly engages the ball. A ball provides increased bearing surface for pivot pin.

LOCK NUT FOR DOUBLE-THREADED BOLT.

137,272.—B. Pittorino, N.S.W.

Lock nuts for a double-threaded bolt have co-operating spigot and socket to prevent unlocking. In a modification the spigot and socket may also be threaded to further increase the locking effect.

HANDLE FOR CUPS.

137,263.—C. Rothauer, S.A.

A cup or the like and the handle are formed integrally and simultaneously by means of inner and outer dies, between which is relative movement in one plane, the inner die having a portion to form the inner mould for the cup, and a core co-operating with a recessed edge on the outer die to form the handle, portion of which is displaced from the plane of movement of the core to form the finger hollow of the handle and allow die movement.

TENDERS FOR PATENTS

WEBSTER JAMES DALY, the proprietor of Australian Patent No. 127,620, for "Photographic Film Developing Apparatus", invites enquiries from persons interested in manufacturing or using the patented invention in Australia under licence or other arrangement.

Address enquiries to
A. WALLACE SMITH, 358
Collins Street, Melbourne.

AMBULANCE STRETCHERS.

The inventor of an improved stretcher for Ambulance, Hospital and other use, which deposits patients on the hospital bed, in desirous of receiving enquiries, etc., from firms interested in the manufacture or purchase of the patent rights in Australasia or the sale by tender in individual States of the Commonwealth. Highest or any tender not necessarily accepted. Provisional Protection No. 34,725/50. Write J. N. Grey, Box 41, Coonabarabran, N.S.W.



**PRESSED STEEL
WINGNUTS**

Reg. design No. 24283



Are Lighter and Stronger

Threads cut in cold drawn steel of high hardness, with superior resistance to wear and tear.

MANUFACTURER

C. B. RAETZ

"CARA" STEEL PRODUCTS

107 Hawarra Road, Marrickville, N.S.W. Tel.: LM 9079.

Obtainable from Leading Engineering and Hardware Supply Houses.

METAL SPRAYING

(Schoop Process)

RUST-RESISTING COATINGS
METAL COATINGS PTY
LTD.

19 Bridge Road, STANMORE

N.S.W. Phone: LA 3833

Anti-Corrosive Engineers and Sand Blasters.

**LINSEED OILS of
Guaranteed Quality**



Head Office: 67 YORK ST., SYDNEY.

Box 1555, G.P.O., Sydney.

Works: Parramatta, Melbourne, Adelaide.



140 QUEEN ST. MELB. MU 3618

ENGINEERS!

SAVE YOURSELVES
TROUBLE BY USING



Manufactured by
W. A. L. Agnew & Son
PTY. LTD.
271 MACAULAY ROAD
NORTH MELBOURNE
Phone: F 1484

CANS

Printed or Plain.

FANCY METAL BOXES
KEGS AND DRUMS

RICHARD HUGHES
PTY. LTD.

A MODERN FACTORY AT
YOUR SERVICE

Phone **UJ 2121** (6 lines)
59-75 Queens Rd., Fivedock
N.S.W.

Specify
(M&W)
MICROMETERS
for all purposes

OUTSIDE MICROMETERS
INSIDE MICROMETERS
JAW & LIVE RANGE OF SPAN
THOMAS & CO. LTD.
10, SLANDER DRIVE - 170' ST.
MILTON, QUEENSLAND
AUSTRALIA

MEMBERS OF BRITISH
STANDARDS INSTITUTION

MOORE & WRIGHT (AUSTRALIA) LTD
10, SLANDER DRIVE - 170' ST.
MILTON, QUEENSLAND
AUSTRALIA

TRADE MARK APPLICATIONS

94,664. "Alconduit." Alumin-
ium and aluminium alloys.—
Aluminium Union Limited, 1155
Metcalf Street, Dominion Square,
East Montreal, Quebec, Canada.

96,153. "Kovar." Alloyed
metals.—Westinghouse
Corporation, 700 Braddock
Avenue, East Pittsburgh, Pennsylv-
ania, U.S.A.

94,950. "Red Fox." Woodwork-
ign machinery.—H. P. Gregory
& Co. Pty. Limited, 74 Clarence
Street, Sydney, N.S.W.

94,921. "Vega." Faucets, stop
cocks, valves and taps.—Ronald
Alan Gissing, 52 Provost Street,
North Melbourne, Victoria.

95,073. "Johnsman." Valves,
floats, pipe joints and other parts.
—Johnsman Trading Proprietary
Limited, 323 Burke Road, Gardi-
ner, Victoria.

96,115. A diamond shaped label
with the word "Unitus." Pressure
cookers.—Harding & Wood, Park
Road, Rydalmere, N.S.W.

95,018. "Queen Bee." Knitting
pins or needles.—Patons & Bald-
wins Limited, Darlington, County
of Durham, England.

96,222. "Hercules." Air heating
and/or drying apparatus.—The
Hercules Heater Co., 4a Ormond
Street, Paddington, N.S.W.

95,020. "Boltonia Bark Street."
Leather, skins unwrought and
wrought.—Bolton Leathers Ltd.,
Weston Street Tannery, Bolton,
Lancashire, England.

FIREBRICK INDUSTRY FOR SOUTH AUSTRALIA.

Mr. W. E. H. Pascoe, manag-
ing director of Pascoe and Co.
Ltd., Adelaide, recently announced
the formation of a £100,000
enterprise in South Australia to
manufacture firebricks and elec-
trical ceramics. They will be
produced from local clays, which
have been described as equalling
those found in any part of the
world. "Victorian and New South
Wales firms which used to supply
South Australia with high-grade
firebricks," said Mr. Pascoe,
"cannot now send supplies here
because of demand in their own
States. Because high-grade fire-
bricks are needed for high-
temperature furnace construction
and boiler installations, secondary
industry must have supplies." Pointing out that production is
planned of firebricks and high-
voltage insulators, Mr. Pascoe
added that his company is negoti-
ating with a world-renowned
American company for the manu-
facture of the insulators in Aus-
tralia under licence.

Be independent of

POWER SHUT DOWNS



Immediate delivery from stock of
auxiliary power plants 16KW to
55KW. Early delivery of other plant
up to 1000KW.

BRITISH OIL ENGINES (A/ASIA) PTY. LTD.

A Unit of Electricity Meter & Allied Industries Limited
62 Margaret St., Sydney. Phone BX 3891
and at Melbourne

FACTORY EQUIPMENT

"BURNER" Lathe Chucks
"MERCE" Dial and Cylinder
Gauges
"DING DONG" Hackaw
Blades
"MYFORD" Lathes
"COLEY" Thermometers

PAUL WITZIG & CO. PTY. LTD.
45 York Street, Sydney, N.S.W.
Telephone: BX 3147

SCIENTIFIC INSTRUMENT MAKERS

Repairs and Servicing of—
Electrical, Optical
and Automotive Instruments,
Dental Equipment,
Industrial Gauges.

**OLYMPIC METAL
INDUSTRIES**
Little Walker St., Nth. Sydney.
Tel.: XB 1978



HEAD OFFICE : 200 BAY ST. PORT MELBOURNE

AIRCRAFT • MARINE • AUTOMOTIVE • INDUSTRIAL GASKETS • ACCESSORIES MANUFACTURERS •

ACCEPTED TENDERS

COMMONWEALTH

DEPARTMENT OF SUPPLY AND DEVELOPMENT.

Chill Mould, for Concave (File No. C4/371/245). David Duncan, £250/9/8.

Unions, Fuse and Detonator (File No. C4/374/14). Crusader Plate Co. Pty. Ltd., £761/14/-.

Bradma Addressing Machines (File No. C4/375/10). Spicers (Australia) Ltd., £288/3/-.

Caliper, Micrometer (File No. C4/376/21). McPherson's Ltd., £115/13/4.

Singer Sewing Machine Treadle Drophead (File No. C4/377/14). Singer Sewing Machine Co., £337/17/6.

Passenger Buses (File No. C4/303/102). Nuffield (Aust.) Pty. Ltd., £7,108/2/6.

Planing Machine (File No. C4/313/95). McPherson's Ltd., £10,080.

Radial Screwing Machine (File No. C4/313/209). McPherson's Ltd., £319.

Cramp Folding Machine (File No. C4/313/216). Frank Vial & Sons, £164/13/3.

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Carrier System, 12 Channel. Items 1 to 6 (Spec. Items a, b and c.), to Spec. No. 81). Telephone Mfg. Co. (Aust.) Pty. Ltd., £19,049.

Transmission Measuring Instruments (Item D of Spec. No. 81), for a 12 Channel Telephone System. Standard Telephones & Cables Pty. Ltd., £2,635.

DEPARTMENT OF MAIN ROADS.

Concrete Pipes. Humes Ltd., £34/10/-.

Pump Pump. McPherson's Ltd., £63/7/6.

Platinum Crucible. Harringtons Metallurgists Pty. Ltd., £13/10/-.

Jackhammer Parts. Pneumatic Tool & Engineering Co. Pty. Ltd., £56/2/-; Whyte-Hall British Products Pty. Ltd., £2/14/-.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Grease, various, during period 1/7/50 to 30/6/52 (Sch. 182). Vacuum Oil Co. Pty. Ltd. The

Shell Co. of Aust. Ltd., Atlantic Union Oil Co. Ltd., Caltex Oil (Aust.) Pty. Ltd. Rates.

Motor Accessories, during period 1/7/50 to 30/6/52 (Sch. 199). G.U.D. Manfg. Co. Pty. Ltd., A. G. Healing Ltd., Gardiner Gaskets Pty. Ltd., E. A. Machin & Co. Ltd., J. H. Farrer & Co. Pty. Ltd., Slade, Allan & Co. Pty. Ltd., Associated Power Seals Pty. Ltd., J. C. Ludowici & Son Ltd., Russell Manfg. Co. Pty. Ltd., McPherson's Ltd., J. J. Masur & Co. Pty. Ltd. Rates.

Sellum Rectifiers (7645). Standard T. & C. Pty. Ltd., Item 1, £11/5/- each; Item 2, £7/5/6 each.

Pressed Steel Tool Lockers (7663). E. T. Brown Ltd., £4/3/- each, less 30 per cent.

Brass, Strip, Hard Rolled (7536). Austral Bronze Co. Pty. Ltd., 1/111 per lb.

Paraffin Wax, etc. (Sch. 184). Atlantic Union Oil Co. Ltd., Vacuum Oil Co. Pty. Ltd., Robert Bryce & Co. Pty. Ltd. Rates.

Painters' Sundries (Sch. 186). E. L. Yencken & Co. Pty. Ltd., W. & G. Dean Pty. Ltd., Hardie Trading Ltd., Lewis Berger & Sons (Vic.) Pty. Ltd., Australian Plaster Industries Pty. Ltd., Sel-

ley's Chemical Manfg. Co. Pty. Ltd. Rates.

Glass (Sch. 188). Stansfield & Smith Pty. Ltd., T. S. Gill & Son Ltd., E. L. Yencken & Co. Ltd., Brooks, Robinson Pty. Ltd., W. & G. Dean Pty. Ltd., Melbourne Glass Beveling and Silvering Co. Pty. Ltd., Silverwood & Beck Pty. Ltd. Rates.

General Hardware, No. 1 (Sch. 192). C. G. Roeszler & Son Pty. Ltd., Adverts Pty. Ltd., John Danks & Son Pty. Ltd., McPherson's Ltd., Wormald Bros. (South) Ltd., R. B. Davis Pty. Ltd. Rates.

Grindstones, Abrasive Wheels, etc. (Sch. 196). McPherson's Ltd., Union Abrasives Pty. Ltd., Eliza Tinsley Pty. Ltd., Perrot & Adams Pty. Ltd. Rates.

Abrasive Materials (Sch. 197). W. & G. Dean Pty. Ltd., Taubman's Pty. Ltd., McPherson's Pty. Ltd., A. G. Healing Ltd., Eliza Tinsley Pty. Ltd. Rates.

Brake Lining (Sch. 201). G. P. Hordern. Rates.

Wirework, etc. (Sch. 202). A.R.C. Engineering Co. Pty.

(Turn to page 64.)

SOLVE YOUR PROBLEMS . . .

in industrial HEATING, DRYING or BAKING PROCESSES
Australia's foremost ELECTRIC HEATING ENGINEERS offer a wide
STANDARD range of automatically controlled, thermal convection or fan
circulation

MARTIN INDUSTRIAL ELECTRIC OVENS

Features of design and construction exclusive to "MARTIN" equipment will give you —

SUBSTANTIAL REDUCTION of PRODUCTION TIME CYCLE
CLEANLINESS and CONVENIENCE of OPERATION
UNSURPASSED ECONOMY of PERFORMANCE
GREATER CUBIC CAPACITY at LOWER COST
DECREASED FIRE RISK

Whatever the heating process, use our experience —

CONSULT

MARTIN FURNACE & ENGINEERING PTY. LTD.

Industrial Electric



Equipment Engineers

168 Euston Road, Alexandria, N.S.W.

Phones: LA 4418, LA 5178.

DISTRIBUTORS:

TASMANIA: The Reliance Trading Co., Hobart.

WEST AUST.: Davies & Ferguson, Perth.

VICTORIA: British General Electric Pty. Ltd., Melb.

QUEENSLAND: C. F. Willers, Brisbane.

SOUTH AUSTRALIA: Mr. J. H. Lew, Netherby.

N.Z.: W. E. Lawingham Ltd., Auckland.



Typical Martin Standard Oven.



ROTO-FINISH

*The Engineered Process for Mechanical
Finishing and Deburring*

Roto Finish is a production process for deburring and finishing parts employing a controlled rotary action with special mineral chips and compounds. Roto Finish is entirely mechanical—eliminates tedious manual operations—handles parts in bulk loads and requires no skilled labour.

ECONOMY.—One operator handling several machines may replace a score of skilled employees using deburring tools, files, belts and wheels.

PRODUCTION.—Roto Finish speeds up production deburring and finishing operations—large quantities of parts are processed in one operation in a fraction of the time required by manual methods.

TAKE ADVANTAGE OF OUR FREE SAMPLE PROCESSING

A. FLAVELL PTY. LTD.

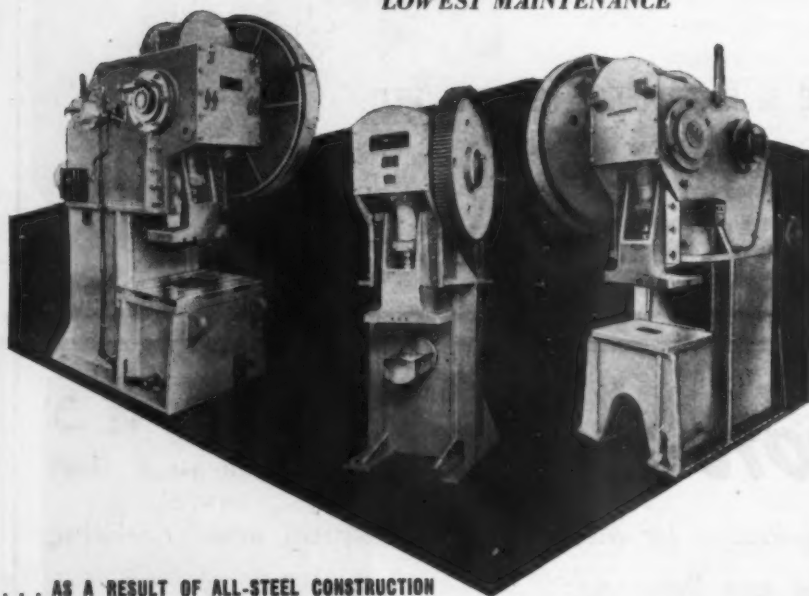
283 Hoddle Street, Collingwood, Victoria

AUSTRALASIAN LICENSEES STURGIS PRODUCTS CO., STURGIS, MICHIGAN, U.S.A.



Any One OF THESE THREE Open-fronted Presses will give you—

- GREATER PRODUCTION ACCURACY
- LONGER DIE LIFE
- SUSTAINED OUTPUT AND LOWEST MAINTENANCE



... AS A RESULT OF ALL-STEEL CONSTRUCTION

Size for size, all-steel fabricated presses are more rigid than conventional cast frame types—and rigidity in a press adds up to longer die life, more accurate output and sustained operating. If you are looking for ways to increase your earning power, start with your plant—a change over to all-steel presses will bring production economies plus lowered maintenance.

The facts are yours without obligation.

Welded Products Limited

94-96 O'RIORDAN STREET, ALEXANDRIA, N.S.W., AUSTRALIA
Phone MU 2411 (3 lines). Telegrams and Cables: "Welpred Sydney"

Manufacturers of the largest range of
All-Steel Metal Working Machinery
in Australia.

Left—120 ton all-steel Open-fronted Press.

Centre—75 ton Horn Press.

Right—75 ton Open-fronted Press.

Available as Horn and Swinging Table Presses. Good delivery subject to prior sale.

(Continued from page 62.)

Ltd., The Titan Nail & Wire Pty. Ltd., Melbourne Wireworks, P. Lummis & Sons, F.R.S. Ideal Spring Co. Ltd., Cyclone Co. of Aust. Ltd. Rates.

Tool Steel, etc. (Sch. 209). The Eagle & Globe Steel Co. Ltd., Gilbert Lodge & Co. Ltd., Commonwealth Steel Co. Ltd. Rates.

Steel for Hot Forging Dies (Sch. 210). McPherson's Ltd. Rates.

Drapery, etc. (Sch. 217). E. Luftt & Son Pty. Ltd., R. J. Forbes Pty. Ltd., Gilbert Lodge & Co. Ltd., Cotton Dressings Pty. Ltd., Austin Paper Manufacturers Ltd., L. Nevendorf, W. A. Lonie, M. Simonson Pty. Ltd., I.C.I.A.N.Z. Ltd. Rates.

Pencils (Sch. 219). Edwards Dunlop & Co. Ltd., The Royal Sovereign Pencil Co. (Aust.) Ltd. Rates.

Carbon Brushes (Sch. 228). The Morgan Crucible Co. (Aust.) Pty. Ltd., H. R. Hill & Sons Pty. Ltd., O. H. O'Brien (Melbourne). Rates.

Dixie Cups and Fibre Cartons (Sch. 231). Corrugated Fibre Container Pty. Ltd. Rates.

Filter Elements (Sch. 236). G.U.D. Manufacturing Co. Pty. Ltd., Tutt, Bryant (Vic.) Pty. Ltd., Gardiner Gaskets Pty. Ltd., W. L. Ryan Pty. Ltd. Rates.

Consolidation Class Locomotives (Con. 58,266). The Steel Co. of Aust. Ltd., as agents for The Vulcan Foundry Ltd. Rates.

PUBLIC WORKS DEPARTMENT.

Machinery, for Mont Park Mental Hospital. Austronic Eng. Laboratories, £250.

Fittings, for Camperdown High School. A. E. Evans, £89/14/6.

Fluorescent Lighting, for Brighton Technical School. Neon Fluorescent Products, £328.

Battery Equipment, for Research Farm. P. B. McErvale, £295.

Lift, for Public Office, Treasury Gardens. Otis Elevator Co. Pty. Ltd., £6,288.

Lighting, for School of Mines. H. Rowe & Co. Pty. Ltd., £341.

Fly Wire Window Screens. W. & D. Pitts & Son, £38/10/-.

Equipment, for Melbourne Technical College. Earle, Griffiths (V.) Pty. Ltd., £453.

Heating Stoves. McLean & Boakes, £62/15/-.

Fly Wire Door Screens. D. Tinknell, £94.

Fittings, for North Shore School, £328.

Fittings, for Prefabricated School. W. Russell, £164.

Motor Boats, for Fisheries Dept. J. C. Bull & Neill, C. C. £4,280.

Stove, for Geelong Girls' School. F. Purcell & Co., £25/7/9.

Fly Wire Doors and Window Screens, for Drouin, £45.

Equipment, for Pentridge. Smith & Bate, £562/10/-.

(Turn to page 67.)

SPEED UP STOPPING

with—



CLIMAX STOPPERS, with automatic rotation and disc valve gear are the fastest of their type available. Providing correct relationship of blow to depth of chip, ensuring maximum fracture with every blow, CLIMAX STOPPERS maintain the rugged reliability for which CLIMAX Products are world famous.

AIR COMPRESSORS
ROCK DRILLS
DRILL SHARPENERS
PNEUMATIC TOOLS
AIR MOTORS
PROSPECTING DRILLS
ELECTRIC TOOLS
TRENCH PUMPS
TUNGSTEN CARBIDE
MAXBITS



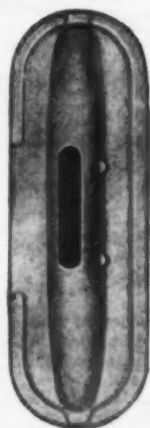
Full information and literature available on application to:—

K. L. DISTRIBUTORS PTY. LTD.

460 BOURKE STREET, 59 YORK STREET, 233 ELIZABETH ST.,
MELBOURNE SYDNEY HOBART
MU.7187 BX.2792 HOBART 6332
121 BRUNSWICK ST., THE VALLEY, BRISBANE. L.2191

PASCOE & CO. LTD.,
282 PORT ROAD
WOODVILLE, S.A.
M 7127

K.L. DISTRIBUTORS, SALES
DIVISION OF KELLY & LEWIS
LTD.,
349 WILLIAM STREET, PERTH, W.A.
B 7640



DIECASTINGS

Save cost because they
save time, metal
machining and polishing

Consider what these factors
mean to your production. . .

VACUUM CLEANER PARTS
here depicted are the base,
swivel joint and shoulders of the
swivel floor nozzle, end castings
for the motor, and coupling
pieces for brush attachments.
Pressure diecast in zinc or alu-
minium alloy they require very little
finishing work after leaving the
dies.



R. H. LAWRENSEN PTY. LTD.

Works and Office: BIRMIE AVENUE, LIDCOMBE, N.S.W. Telephone: UX6948 (3 lines)

REX PAK and TULIP

MECHANICAL PACKINGS

CORRECT PACKINGS FOR EVERY SERVICE
Plastic - Metallic Feds - Automatic Lip - Braids - Sheet Jointings - Gaskets

Famous the world over -

DRAYTON ARMSTRONG
Trouble-free
STEAM TRAPS

DRAYTON ARMSTRONG
INVERTED BUCKET
STEAM TRAP

DRICO Thermostatic Traps for light duty
ALSO
Strainers, Sight Glasses, Temperature Regulators,
Pressure Switches and all types of Controls and Regulators.
Made by Drayton Regulator & Instrument Co. Ltd., Middlesbrough, England.

Basil V. R. Greatrex
PROPRIETARY LIMITED
151 SUSSEX ST., SYDNEY, N.S.W.
Telephone: BX4717-8

INDUSTRIAL EQUIPMENT

By **AMAL** LTD.
BIRMINGHAM, ENGLAND.

JET CALIBRATING MACHINES
BALL & ROLLER JOINTS
BUNSEN BURNERS
GAS INJECTORS
JETS

FLAME TRAPS
FLOWMETERS
FUEL PUMPS
FUEL FILTERS
CARBURETTORS

Special Contract Prices will be Quoted to Manufacturers

AUSTRALIAN REPRESENTATIVES:
R. V. BRISTOL & CO. PTY. LTD.
306 Bourke Street, Melbourne. Phone: MU 2282.
95 Bridge Road, Glebe, N.S.W. Phone: MW 2710.
And at ADELAIDE • BRISBANE • PERTH • HOBART

NEW RELEASE of amazing
40 lb. 2½ Horse power Petrol Engine!

Cylinder Hood Air Trap

Bore 2¼ x 2

Internal Air breather

Simplified oil inlet and outlet

Top and filter integral

New Contact Point Assembly

New Magneto Armature

New die cast base

Opens up an entirely new field for operating pumps, portable power tools, generating plants, etc.
Availability August.

LIST PRICE: £39/10/-
SPECIAL DISCOUNT TO MANUFACTURERS

Full details from
AMPLION (A'sia) PTY. LTD.
36-40 Parramatta Road, Camperdown. LA 2828.

NON-FERROUS CASTINGS

Aluminium alloy casting, approx. 3R. high.

Capacity is available for the production of non-ferrous castings, in production quantities in ALUMINIUM ALLOYS, sand or permanent mould chill cast, either fully heat-treated and aged or with precipitation treatment, also in BRASS BRONZE and GUNMETAL ALLOYS, sand cast, both single and multiple spray castings, as required by Engineering and Industrial users.
For further details phone our Technical Service Engineer, MX2411.

Wunderlich Limited
BAPTIST ST., REDFERN, SYDNEY
BRANCHES IN ALL STATES

(Continued from page 64.)

Refrigerator, for Ballarat Mental Hospital. Quirk's All-Aust. Refrigerators Pty. Ltd. f117.

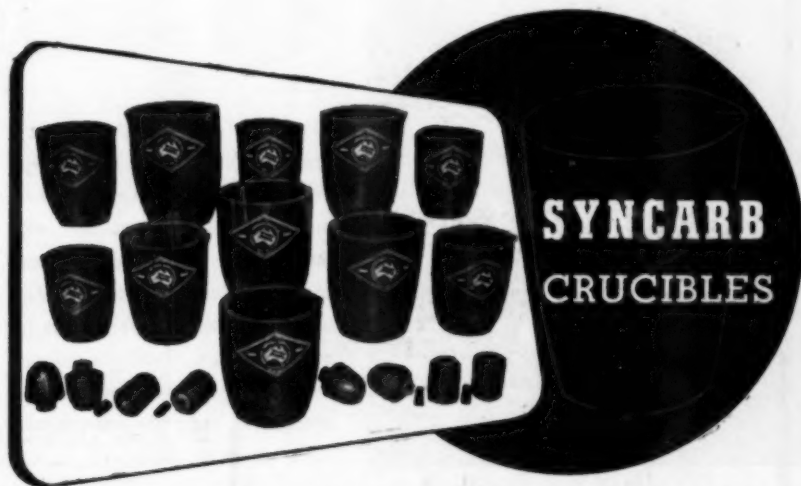
Hot Water System, for Warrnambool Technical School, f163/9/10.

Forming Sheet Metal

(Continued from page 48.)

is accomplished with a pressure stroke which is softened by the rubber so that soft tooling materials may be employed. The process tools are simply placed on the lower platen for the forming operation and the metal blanks to be formed are placed on the form blocks, although locating pins are generally employed to ensure the proper location of the blank on the tool. Any arrangement of form blocks can be placed around the surface of the lower platen. This method is very good when the stamping operation involves either a straight bend in the metal, stretching, or a combination of both. This is because there is no tendency to wrinkle in metal bent on a straight line, or in stretching metal into a shape such as a concave flange, or a bead. In metal being shrunk into such a shape as a convex flange or a deep drawn cup, however, the tendency to wrinkle is developed.

The pressures employed in the process have not been of sufficient magnitude to solidify the rubber to a degree which would give it sufficient local stiffness to prevent wrinkles. A simple increase in pressure would not solve the problem, however, since the basic difficulty in the fact that some movement of the retainer must take place against the tools and forming blanks before any pressure is built up in the rubber. This means that wrinkles can begin to form before any pressure is built up in the rubber to prevent their formation. This is true regardless of the eventual pressure available. This is a very important fact since it is extremely difficult to remove wrinkles once they have begun to form. The newly evolved process is designed to combine the forming capacity of a steel die with the economical tooling of the previous process. This objective has been attained to a high degree although certain minor compromises have been necessary. The same simple male punch is used, but it also requires rests. It is therefore unnecessary to make either a female die, pressure plate or draw ring. Although the new process does not give the embossing definition of a steel die, it has advantages in many cases. For example, the forming ability of a tool or material is generally judged on the basis of the depth of round cup it will draw on a given size of punch. This can also be expressed by stating that the basis of drawability is the percentage reduction in area which can be made on a blank in one forming operation. A 40 per cent. reduction in area is generally expected on a steel die when forming aluminium alloys,



MANUFACTURED IN AUSTRALIA

★

Refractory Bricks and Shapes to—

SILICA, HIGH ALUMINA, KYANITE, SUPER DUTY ALUMINA, SILICON CARBIDE, MAGNESITE, CHROME FIRECLAY.

Insulating Bricks, Shapes and Filling in Various Materials.

High Temperature Cements and Plastic Refractory Materials, Thermofrax, Newbold, Sealite, Fused Alumina, etc.

Silicon Carbide Mullies, Fireclay Mullies, Crucibles.

Syncarb graphite crucibles are bonded entirely by carbon residues and offer, as a result, a number of cost-saving and operating advantages over conventional-type crucibles, as, for instance, lack of any necessity for annealing before being put into service.

Other advantages of Syncarb crucibles include—higher refractory characteristics, making for longer life at higher temperatures... self-glazing properties, preventing oxidation... higher thermal conductivity, making for faster melting.

Cost-minded foundrymen, looking for ways to save fuel, save on crucibles and increase metal pourings, will investigate Newbold Syncarb—the improved graphite carbon-bonded crucible that will not spall, scarp or crack.

★ Newbold Graphite Plant at Waratah, N.S.W.



NEWBOLD GENERAL REFRACTORIES LTD.

Head Office: 28-30 CLARENCE ST., SYDNEY, N.S.W.

Works: Waratah, Thirroul, Port Kembla, Wollongong, Mines and Quarries: Redhead, Lithgow, Cooma, Thirroul, Home Bula, Puggoon, Coonabarabran, Orange, Tullamore, Grafton.



"Federal's fuse production programme for 1950 is astounding. We merchants are confident that our porcelain fuse troubles will soon be over. We have witnessed the way Federal filled the ironclad switch and switch-fuse market in one short year. Federal's characteristically vigorous methods will achieve at least the same result with regard to fuses".

Merchants, Contractors and indeed the entire electrical industry can be assured that the output of Federal fuses is increasing rapidly. Very soon more Federal fuses will be produced each month as in any entire pre-war year. Merchants everywhere will have complete LU and MU stocks.

FEDERAL

SWITCH & FUSE GEAR

Made by:
**NILSEN CROMIE
PTY. LTD.**
Collingwood,
Victoria

Sales Organisation:
**NILCROM ELECTRICAL SALES
(Aust.) Pty. Ltd.**
45 Bourke St.,
Melbourne 35 Market St.,
Sydney

Queensland — K. H. Dore, Brisbane.
South Aust. — E. Bown, Adelaide.
W. Aust. — M. J. Bateman Pty. Ltd., Perth.
Tasmania — R. H. Littler, Launceston.
New Zealand — Carrol & Carrol, Auckland.

Contact your Electrical Merchant for Supplies

The **NILSEN INDUSTRIAL GROUP**

NONPORITE PTY. LTD.
292-6 BURWOOD RD.,
HAWTHORN, E.2, VIC.
Telephones: Haw. 5801-2, 801.



AGENTS
ALL
CAPITAL
CITIES
SEE
TELEPHONE
DIRECTORY

EXPORTERS — IMPORTERS
**GUTWIRTH & SONS
PTY. LTD.**
296 Collins Street
MELBOURNE, VICTORIA
Telephone: Cent. 4618

for example: a reduction in area of 50 per cent. can be attained if extra care is exercised. A reduction in area of 87 per cent. is considered normal with the new process on the same material and figures as high as 70 per cent. have been attained in testing operations.

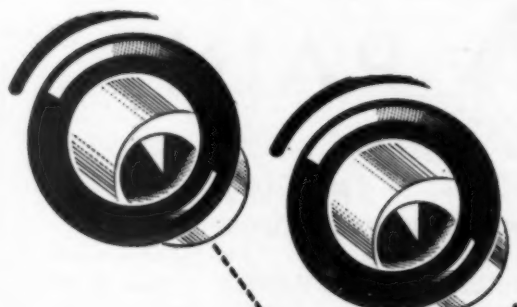
Similarly, a cup depth equal to the radius is normally expected from a steel die, while with the new process a depth equal to 11 times the radius is expected on the same material and depths equal to 1.2 times the diameter have been attained.

There are several apparent reasons for this added formability. One of the most obvious reasons is the fact that the rubber has a cushioning effect and therefore prevents rapid application of strain at any point on the metal in contrast to the situation in a steel die where localised applications of strain may be quite severe. The rubber also exerts a lateral pressure during the forming operation which is a direct result of the applied forming pressure. The lateral pressure has the effect of locking the metal already formed to the male portion of the tool, which in turn prevents an accumulation of strain at the punch radius and thereby causes the strain to be distributed uniformly over the complete surface of the piece being formed. The importance of this is readily demonstrated by the fact that most failures in parts formed by steel dies occur when the top pops out of the part, with the fracture along the line of the punch radius. The prevention of concentration of strain at the punch radius not only enables a part to be formed deeper but results in more uniform thickness.

Another advantage is that the rubber locks the material against the punch. Very localised elongation of metal can safely be higher than elongation over a relatively longer gauge length. The rubber automatically causes the metal to be strained over a much shorter gauge length by locking it just above the point of instantaneous forming and therefore provides the elongation available from the shorter gauge length.

The third factor which enables the process to form a deeper part in one operation is the ability of the machine to provide an exact required pressure on the material at each desired depth of stroke. This pressure can be varied in either direction; in other words, it can start low, be increased, and then drop. It can gradually be increased from start to finish, or it can be started at a high value and then dropped gradually to a lower value. The pressure variation can be infinite within the minimum and maximum values, and therefore it is not a series of steps.

Among other advantages provided is the precision with which many shapes can be formed. Sheet metal parts can be made to a tolerance of ± 0.002 in. A tolerance of ± 0.005 in. is commonly obtained on parts where the shape is sufficiently rigid to maintain such accuracy. Material as thin as 0.010 in. thick has been successfully formed, and



Tremendous Trifles in Metal

Leaders in mass production
of meticulously accurate
small metal stampings.

EYELETS



EYELETS PROPRIETARY LTD.
WINDSOR, VICTORIA

a 0.012 in. gauge cup was deep-drawn to the point where the depth of the cup was 0.8 of the diameter of the cup. Gauges as thick as 0.675 in. in aluminium alloys and 0.102 in. in mild steel have been formed.

EFFECT ON FINISHES

The cost of applying finishes to formed shapes is sometimes critical. This is particularly true of polished surfaces. It is economical to polish material before forming. This results in marred finishes when the normal processes are used; but

parts have been formed on the new machine from material previously coated with such finishes as vinyl, aircraft paints, and crackle paints, or polished without sustaining any damage.

In the first installation, a pressure plate, shaped to fit around the root of the punch with a clearance of about 1/16 in., is dropped over the punch and is located by means of box guides. The plate is then raised inside the guides by a number of plungers resting in turn on a hydraulic ram. The plate is raised by the plungers until its upper surface

is just above the level of the top of the punch. The pressing blank is then placed in position resting on the pressure plate. The pressing operation then begins and the rubber matrix in its container descends until the blank is held between the pressure plate and the rubber. As the rubber matrix descends further and forces the sheet metal blank over the forming punch, the pressure holding the blank between the rubber and pressure plate is regulated by means of hydraulic pressure applied from an independent source by the ram supporting

the pressure plate. This pressure is regulated by means of a control valve actuated by a simple sheet metal profile attached to the rubber container so as to move up and down with the latter. By this means the pressure holding the blank is regulated so as to provide the correct degree of tension on the plate throughout the operation. The sheet metal profile actuating the pressure control valve can be altered in a few seconds to accommodate any change of thickness or material within the capacity of the press.



Torsion

SPRINGS OF ALL TYPES & SIZES

AUTOMATIC PRODUCTION

WHITELAW SPRINGS PTY. LTD.

562 SPENCER ST., MELBOURNE, PHONE FJ1135

Handy for every Workshop!

HIGH-GRADE

Spiral Springs

● NOW AVAILABLE in all types and sizes, these springs are strong, pliable and reliable—have 1001 uses around the home, shop or factory. ● Packed in strong, handy sized cartons, they're on hand, ready for immediate use wherever and whenever required. ● And most important, they're MADE BY HENDERSON'S, the firm whose products are all guaranteed to be made of high-quality steel—who can supply any special size or type of Spiral Spring you may require.

ASSORTED
TENSION
SPRINGS

72 ASSORTED
COMPRESSION
SPRINGS

MSA-12

HENDERSON'S
FEDERAL SPRING WORKS LIMITED

(Incorporated in Victoria)

MELBOURNE HEAD OFFICE & WORKS: Alfred St., North Melbourne, N.1. 719811
City Address: 481 Elizabeth Street, Melbourne, C.1.
SYDNEY: 171 Bourke Street, Alexandria, NSW 2015.

AUTOMATIC BAR WORK

STEEL OR BRASS

Capacity Available 1/2-2 1/2 inches

PURVIS-GLOVER ENG. Pty. Ltd.

41 Moreland St. } FOOTSCRAY

54 Hopkins St. } VICTORIA

MW 2284

DETEL



PAIN

ABSOLUTELY

DEFEATS

ACIDS • ALKALIES • SEA WATER

AND THE MAJORITY OF CHEMICAL SOLUTIONS

MANUFACTURED BY DETEL PRODUCTS LTD., GREENFORD, MIDDLESEX, ENGLAND.

Australian Selling Agents:

McKINLAY FLETCHER Pty. Ltd., 277 CLARENCE ST., SYDNEY Phone: M2775

CURRENT TENDERS

NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

Brass Rod (Sch. C.6370). Aug. 13.

Brass Sheet and Strip (Sch. C.-6371). Aug. 13.

Cardboard Cartons, Corrugated (Sch. C.6382). Aug. 10.

Cords, Switchboard Types (Sch. C.6372). Oct. 12.

Gramophone Equipment (Sch. C.6368). Aug. 10.

Light and Power Material, Cords and Cables (Sch. C.6354). Aug. 10.

Maintenance Parts, for Telephone Equipment (Sch. C.6314). Oct. 5.

Printed Forms, "R", "S.E." & "P.M." Series (Sch. C.6373). Aug. 3.

Recording Material (Sch. C.-6369). Aug. 10.

Switchboards, Cordless (Sch. C.6360). Extended to Aug. 31.

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Direct on Line Starter, iron clad, start-stop, push-button station (Quot. CE-1001). July 31.

Hot Press Unit, elect. heated, 240 volt. (Quot. CE-1020). Aug. 10.

Squirrel Cage Induction Motor, 10 h.p. (Quot. CE-1037). July 27.

Squirrel Cage Induction Motor, 50 h.p., 415 volt., 1,440 r.p.m. (Quot. CE-1001). July 31.

Traction Gear Wheels, resilient type (Quot. CE-2028). July 26.

Metering Transformer Units, outdoor (Quot. CE-1021). July 27.

DEPARTMENT OF MAIN ROADS.

C.I. Handrail Bracket. July 27.

Calico Road Signs. July 25.

Concrete Pipes. July 27.

Concrete Pipes. July 25.

Electric Floor Polisher. July 27.

Industrial Sewing Machine. July 25.

Laboratory Equipment. July 25.

Pressed Steel Boxes. July 25.

Sieves. July 27.

DEPARTMENT OF WORKS AND HOUSING.

Air Conditioning, Heating and Ventilating Systems, for Peter-sham. Aug. 8.

Air Conditioning Plant, for Nowra. Aug. 8.

Air Conditioning Plant, for Concord R.G.H. Aug. 8.

Heating Coil and Piping. Aug. 8.

Steam and Hot Water Services, for Concord R.G.H. Aug. 8.

FORESTRY COMMISSION.

M.S. Tanks, 300 galls. July 25.

Motor Parts. July 25.

Oil Cans. July 25.

Petroleum Ether. July 25.

Planer Knives. July 25.

Power Hacksaw Blades. July 25.

Septic Tank, concrete. July 25.

MISCELLANEOUS.

Diesel Engine, 76 h.p., Alternator and Switchboard, for Municipality of Peak Hill. Aug. 1.

Diesel Road Roller, 10-12 tons, for Shire of Nambucca. Aug. 21.

Electrical Material: Copper Cable, Insulators, Switchgear, Lightning Arresters and Iron-mongery, for Municipality of Campbelltown. July 24.

Hand Operated Desk Adding Machine, Purchase of, from Wyong Shire Council. July 31.

O.H. type Loader, prefer pneumatic tyres, for Municipality of Ryde. July 26.

Overhead Loader, rubber tyred, for Jamberoo Municipal Council. Aug. 2.

Portable Air Compressor, trailer mounted, on pneumatic tyres, for Municipality of Inverell. July 28.

Purification and Circulating Plant, for Municipality of Gun-nadah. Aug. 8.

Road Grader, light or medium, for Municipality of Wingham. Aug. 11.

Water Mains, "Fibrolite", for Municipality of Taree. Aug. 8.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Non-Ferrous Scrap Metal, Purchase of. July 28.

Traction Motor Armature Laminations and Dies. Sept. 6.

COMMONWEALTH.

RAILWAYS DEPARTMENT.

Canvas. Aug. 1.

Caravans. Aug. 1.

Ingotted Scrap Battery Leads, Purchase of. July 25.

Tarpaulins. Aug. 1.

Tractor, for Towing Platform Trolleys. Aug. 1.

DEPARTMENT OF PUBLIC WORKS.

Briquette Hot Water Service and Electric Hot Water Service, for Fern-tree Gully. July 25.

(Turn to page 71.)

For All Factory Canvasware

CANVAS BLINDS AND AWNINGS
ALL TYPES MADE AND ERECTED

Canvas Component Parts, including Conveyor Belts — Filter Pads — Aprons — Refrigerator and Wireless Cabinet Covers — Canvas Sleeves and Air Chutes for Ventilation — Tarpaulins — Tents — Industrial Waterproof Clothing.

S. WALDER PTY. LTD., 340 Pitt St., Sydney

Telephone: M 8701

NICHROME

RESISTANCE WIRE THE WORLD'S BEST

Made in England

SOLE AUSTRALIAN AGENTS:

WARMAN & DOUGLAS

241 FLINDERS LANE, MELBOURNE.

Phone: JM 1505.

FOUNDRY FACINGS

FOR IRON, STEEL AND BRASS FOUNDERS

PLUMBAGO
SILICA PAINT
WHITE FACING
HARD "ION" IRON

GRAPHITE
COAL DUST
BRICK DUST
CEMENT

BLACKING
BENTONITE
TERRA FLAKE
SHUAFABT

Manufactured by

Phone: MX 3180

PROUD BROS. PTY. LTD.

48 BEACONSFIELD ST., ALEXANDRIA, N.W. And at MELBOURNE, VIC.

NEW TENDERS - Contd.

Condensate Pipe Work and Automatic Valves, for Royal Park Mental Hospital. Aug. 1.
Fuel Hot Water Service, for Manangatang. Aug. 1.
Meat Rails and Racks, for Lake Tyers. July 25.
Refrigeration Equipment, for Lake Tyers. July 25.
Safety Gear (additional), for passenger lifts, for Melbourne. Aug. 1.

DEPARTMENT OF WORKS AND HOUSING.

Distribution Bus Bar System and Take-off Boxes, for Port Melbourne. Aug. 8.
Structural Steelwork, for Essendon. Aug. 1.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Channel Flow Meter and Recorder. Aug. 1.
Flanged Sluice Valves (3, 4 and 6 inch). Aug. 1.

♦ ♦ SEE ALSO ♦ ♦ "LATE OPEN TENDERS"

O.H. Crane (4 ton), hand-operated. Aug. 15.
Tyres and Tubes, for Mack Trucks. Aug. 1.

POSTMASTER-GENERAL'S DEPARTMENT.

File Boards and Time Clock Cards (Sch. V.378). July 25.
Stools, for Technicians and Office (Sch. V.376). Aug. 8.

MELBOURNE HARBOUR TRUST.

Cast Steel Lower Tumblers and Forged Steel Shafts. Aug. 4.
Low Loading Trailer. Aug. 4.

STATE ELECTRICITY COMMISSION.

Cadmium Copper Conductor (Spec. 50-51/27). Aug. 23.
Indoor Wall Mounting Current Transformers (Spec. 50-51/12). Extended to July 26.
Low Voltage Switch-fuse Combinations, totally enclosed (Spec. 50-51/10). Extended to Aug. 2.
O.H. Travelling Crane, electrically operated (Spec. 50-51/18). Extended to Aug. 16.

MISCELLANEOUS.

Bulldozer, T.D.9. Purchase of, from City of Preston. July 31.

Front End Loader, pneumatic tyred, for City of Fitzroy. July 31.

Medium Power Grader, for Shire of Tullaroop. July 28.

Positive Type Meters (1 inch), not less than 200, for Wodonga Waterworks Trust. July 29.

Power Kerosene and Lubricating Oil, for Shire of Broadford. Aug. 1.

Power Grader, medium weight, for Shire of Flinders. July 26.

QUEENSLAND

MISCELLANEOUS.

Switchgear (11,000 volt.), for Townsville Regional Electricity Board. Extended to Aug. 9.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Portable Water Boring Outfit, for Kimberley Stock Route. July 27.

Steam Rollers, for New Pinjarra Hospital. July 27.

Steel Fencing Posts. July 27.

CURRENT TENDERS

The following tenders have appeared in previous issues and are still current.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

Bells and Buzzers (Sch. C-6382). Sept. 21.
Bimotional Switch Armatures and Associated Parts (Sch. C-6356). Sept. 21.
Bimotional Switch Parts (Sch. C-6344). Sept. 14.
Cable Carrier Telephone Equipment, Multi Channel (Sch. C-6385). Aug. 10.
Camp Stools and Tables (Sch. C-6351). July 25.
Canvas and Duck, for Mail Bags (Sch. V.6326). Aug. 10.
Carrier Loading Colls (Sch. C-6341). July 27.
Chairs for Telephonists and Telegraphists (Sch. 2.6348). July 25.

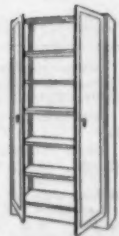
(Turn to page 72.)



Within easy reach . . . and safe in your Steelbilt Cabinet

Papers, publications, documents . . . anything you need for quick reference, there is a place for it in your Steelbilt Executive Cupboard.

Built of all steel, fire-resistant, this type of Steelbilt Executive Cupboard does all the duties of a light safe. Neat in design, attractively finished in dark green enamel, it blends perfectly with any modern office surroundings.



Steelbilt "Security"
Cupboard
Height, 6'4"
Width, 3'
Depth, 15" or 18"

A telephone call to MX 3571 places a Steelbilt expert at your service.

Steelbilt Storage Cupboards

A Product of Steelbilt LIMITED
(A Wormald Brothers Industry)
SYDNEY

Phone MX 3571 - Box No. 1578, G.P.O., Sydney

Represented elsewhere in Australia and New Zealand by Wormald Brothers Industries Ltd.



Steelbilt "Executive"
Cupboard
Height, 3'4"
Width, 2'4"
Depth, 15" or 18"

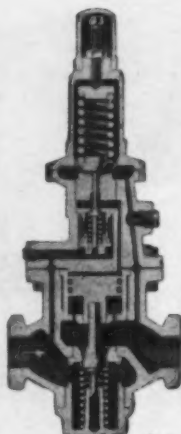
FILING CABINETS
SHELVING

PLAN CABINETS
LIBRARY SHELVING

LOCKERS
WASTE PAPER BINS

FOSTER TYPE 37-G2

PILOT OPERATED PRESSURE REDUCING REGULATOR



(PATENTED)

Initial Pressures up to 300 p.s.i. Final Pressures 3 to 275 p.s.i.

Accurate regulation of final pressure is unaffected by the widest variations of initial pressure, temperature or flow within the capacity limits.

Both Main and Pilot Valves Protected with Built in Strainers

Manufactured in
Australia under
licence by

GOOLD & CLYDE WILSON-REID

PTY. LTD.

800 GEORGE STREET, SYDNEY, N.S.W.

M 3704 — M 3414

Write or Phone for Details

CURRENT TENDERS — contd.

Communication System between Sydney and Melbourne (Spec. C-8157). Extended to Jan. 18, 1951.
Dial Parts (Sch. C.6338). Oct. 3.
Dials, Telephone Calling (Sch. C.6366). Aug. 10.
Identification Tags (Sch. C-6350). July 25.
Lamps, Caps and Sockets (Sch. C.6324). Aug. 15.
Lead Sealers and Parts (Sch. C.6170). Aug. 3.
Leatherwork (Sch. C.6342). Aug. 2.
Magnetic Type Recorders (Sch. C.6303). July 27.
Mechanically Operated Spring-sets (Sch. C.6323). Aug. 1.
Microphone, Stands, and Cable (Sch. C.6316). Aug. 1.
Mild Steel (Sch. C.6345). Aug. 3.
Pole Caps (Sch. C.6336). Aug. 31.
Power Rectifiers (Sch. C.6347). Aug. 1.
Ringing Equipment (Sch. C-6311). Aug. 1.
Routine Testing Equipment (Sch. C.6281). July 25.
Safety Belts and Accessories, for Linemen (Sch. C.6353). Aug. 8.
Semi Automatic Trunk Exchange Equipment (Sch. C.6025). Sept. 28.
Semi Automatic Trunk Exchange Equipment, for Sydney Trunk Exchange (Sch. C.6026). Extended to Sept. 28.

Tool Boxes (Sch. C.6357). Aug. 3.
Transmitting Tubes (Sch. C-6353). Sept. 26.
Wire Carrier Telephone Equipment, 12 Channel Open (Sch. C-6305). July 27.

DEPARTMENT OF CIVIL AVIATION.

Arc Welding Machines (Sch. 297). Extended to July 25.

DEPARTMENT OF SUPPLY AND DEVELOPMENT.

Baskets, for Waste Paper and Feather Dusters. July 27.
Ecclesiastical Equipment. July 25.
Lathe Chucks, Purchase of. July 27.
Machine Tool Accessories. July 25.

DEPARTMENT OF WORKS AND HOUSING.

Blankets (2,000), for Works Hostel. July 25.
Combination Wardrobes and Bedside Writing Tables. July 25.
Copper Wash Boilers (300), complete with stands. July 25.
Copper Wash Boilers (126), with doors, grates and dampers. July 25.
Metal Sheaving, for National Library. July 25.
Standardised Office Furniture. July 25.
Transformers (12), 25 KVA. Aug. 9.

GOVERNMENT RAILWAYS DEPARTMENT.

Electrical Cables, Wires, etc. (Sch. 94). Aug. 9.

Goggles, etc. (Sch. 184). Aug. 16.
Hydraulic Brake Fluid (Sch. 85T). Aug. 9.
Insulating Varnishes, Lacquers, Enamels, etc. (Sch. 93A). Aug. 9.
Oils and Greases (Sch. 85). Aug. 9.

Oil, Lubricating, for Petrol and Diesel Engines (Sch. 82). Aug. 9.
Wire Netting and Wirework (Sch. 68). Aug. 9.

STORES, SUPPLY AND TENDER BOARD.

Envelopes (Sch. C.T.B. 890). July 27.
Floor Oil (Sch. C.T.B. 892). Aug. 3.

Ink, Waterproof, Drawing and Writing (Sch. C.T.B. 892). July 27.
Teleprinter and Teletype Rolls (Sch. C.T.B. 888). July 27.

STATES

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Ash Conveyors, for Lake Macquarie Power Station (Spec. 1288). Aug. 9.

(Turn to page 73.)

THE PINNACLE OF ACHIEVEMENT IN AUTOMOTIVE VALVE ENGINEERING



D.E.C. BRAND AUTOMOTIVE
STATIONARY AIRCRAFT

VALVES

Made in Australia from 12% Silichrome
with HIGHER CHROME CONTENT

— BY —

DREADNOUGHT VALVE PTY. LTD.

49 Ralph Street, Alexandria, N.S.W. 'Phone: MU 2501.

Distributors: C. & J. GEARS & AUTO PARTS PTY. LTD.
315 Castlereagh Street, Sydney.



2 LINES OR 500?

No matter what size your organisation may be, there's an A.T.M. Interphone installation to meet your needs.

Made in England by the Empire's largest manufacturers of telephone equipment, Interphones are available in press button and automatic systems to serve from 2 to 500 lines. You have a wide choice of wall, desk and loud speaker key-calling instruments with many valuable facilities such as conference link-ups, executive priority, etc.

A.T.M. Interphones are available for immediate installation on an economical rental basis or for outright sale.

Fill in and post the coupon for illustrated brochure.



BRITISH AUTOMATIC TELEPHONE & ELECTRIC Pty. Ltd.
Melbourne: G.P.O. Box 4524. Phone M1104. Sydney: G.P.O. Box 2143.
Phone FA 8141. Brisbane: Chandlers Pty. Ltd., G.P.O. Box 1399R.
Hobart: Electronic Supplies, G.P.O. Box 477A. Perth: S.Y. Garnsworthy,
Esq., G.P.O. Box G418.

Please forward your illustrated brochure to

Name _____

Address _____

CURRENT TENDERS — contd.

Air Operated Sump Pump
(Quot. CE-2841). July 25.
Axle Oil, for car and waggons.
Aug. 2.
Bearing Oil, for Locomotives.
Aug. 2.
Coal Handling Equipment, for
Lake Macquarie Power Station
(Spec. 1263). Extended to Aug. 2.
Compression Ignition Oil En-
gines (10), 500 B.H.P., vertical or
vee type, high speed, multi cylin-
der (Spec. 2205). Aug. 30.
Electric Overhead Travelling
Crane (75 ton), (Spec. 504). Sept.
20.
Indoor Type Oil Circuit
Breakers, 6,600 volt., 75 M.V.A.,
for Awaba State Coal Mine Sub-
station (Spec. 1266). Aug. 30.
Indoor Type Oil Circuit
Breakers, 415 volt., for Awaba
State Coal Mine Sub-station (Spec.
1267). Aug. 30.
Lathe, 12 inch centre (Quot.
CE-8212). July 31.
Lightning Arresters, distribu-
tion type (Quote CE-8181). July
26.
Locomotive Cylinder Oil. Aug.
2.
Rectifier Units (4,000 KW) and
Energy Dissipating Resistor Units
(Spec. 1258). Extended to Sept. 6.
Road Weighbridge, 35 ton, for
Conoble. July 26.
Telephone and Fittings. Aug. 2.
Universal Grinding Machine
(Quot. CE-8220). July 27.

DEPARTMENT OF MAIN ROADS.

Bitumen Sprayers. Extended to
Aug. 8.

DEPARTMENT OF WORKS AND HOUSING.

Diesel Alternator (150 KVA),
for Turramurra. July 25.
Diesel Alternator (150 K.V.A.),
for Turramurra. Aug. 22.
Heating and Ventilating Sys-
tem, for Lithgow. Aug. 1.
Rubber Sleeves (300), for Pipers,
for Mascot Airport. Aug. 1.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Automatic Inlet Control Valve,
with control mechanism. Ex-
tended to Aug. 15.
Electric Field Joint Welding of
Mild Steel Pipes. Aug. 1.
Orifice Plate Flow Recording
Meter (18 inch). Aug. 1.
Pumping Unit, electrically driv-
en, centrifugal type, for Brins-
tone Gully Coal Mine. Aug. 8.
Steam Shovel (Excavator), in-
complete, rail type. Purchase of.
July 25.
Pre-cast R.C. Columns, Beams
and Slabs. Aug. 1.
Transformers (2), 500 KVA, for
Warragamba Dam. Aug. 8.
Vertical Spindle Centrifugal
Type Pumping Units (2), electric-
ally driven, for Upper Cordesaux.
July 25.

STATE CONTRACT CONTROL BOARD.

Baths, Sanitary Ware and Fit-
tings. July 25.
Lubricants and Oils. July 25.

(Turn to page 74.)



HOUSEHOLD AND INDUSTRIAL ADHESIVE

Supplied in 6-oz. tubes, pint,
quart, gallon and 4-gallon tins

REPAIRS EVERYTHING

INTERSTATE AGENTS:

Miles and Insulating Supplies Co.,
N.S.W., S.A., W.A., Q'land

Millen Bros., Launceston, Tas.

Reliance Trading Co., Hobart, Tas.

ORMISTON RUBBER CO. LTD.

Moonee Ponds, Victoria

Industrial Diamonds GUTWIRTH & SONS PTY. LTD.

368 Collins Street, Melbourne
P.O. Box 980, G.P.O. Tel.: MU 8118

Chain for all Purposes

Crane and Pulley Block Chain, Coil Chain, Agricultural Chains, Saddlers' Hardware and Non-skid Chains, etc. Suppliers of Chain to Government Stores and Railways.

BENNETT CHAIN CO. PTY. LTD.

Makers of Chain for All Purposes

ALFRED STREET, VALLEY, BRISBANE, N.I., QUEENSLAND.

REPRESENTATIVES:

W.A.—T. R. LEWIS, 140 Murray St., PERTH. S.A.—S. W. SCRYMGOUR, Industrial Buildings, King William St., ADELAIDE. Tas.—ENSLLOW & ENSLOW, 84 Liverpool St., HOBART. N.Z.—W. A. JOHNSTON, 84 Customs St., AUCKLAND. N.S.W.—HOWARD VAUGHAN (AUST.) PTY. LTD., 252 Kent St., SYDNEY.



LYSAGHT'S

100% AUSTRALIAN MADE, FROM AUSTRALIAN MATERIAL.

Specify "LYSAGHT'S" WIRE, WIRE NETTING, Etc.

WIRE Fencing and all other Classes.	WIRE NETTING Black, Black Oiled and Galvanised.	BARB WIRE Low and Special (Long Distance).
WIRE NAILS Brads, Panel Pins, Gloucs, Stators' Nails, Staples.	ZINC OXIDE (Dry) All Grades.	

All the leading MERCHANTS, STOREKEEPERS and AGENTS sell our manufactures.

LYSAGHT BROS. & COMPANY PTY. LIMITED.

Registered Office and Works:

BLACKWALL PT. ROAD, FIVE DOCK, N.S.W.

City Office: 17 BRIDGE STREET, SYDNEY, N.S.W.



**NIFE'S LIFE
WILL SAVE
YOU MONEY**

Longer life, greater strength, simpler operation, no self-discharge! You'll want to know lots more about this all-steel battery and its positive time and money-saving advantages.

THE...

MODERN NICKEL-CADMIUM ALKALINE BATTERY

Is your plant getting all it should from the latest developments in industrial battery manufacture? The versatile Nife Alkaline Battery may solve your problem completely. Contact us by phone or mail and we'll be pleased to send detailed literature or call and see you at your convenience.

MASSE BATTERIES PTY. LIMITED

115-119 CROWN STREET, SYDNEY. FA 7067.

132 Leicester Street, Carlton, Melbourne, N.3. FJ 6671.

Distributors in all States.

CURRENT TENDERS — contd.

SYDNEY COUNTY COUNCIL.

Aerial Pilot Cable and Accessories (Spec. 1433). July 27.

Cable Jointing Compound (Spec. 1442). July 27.

Circulating Water Screens, self-cleaning, for Pyrmont "B" Power Station (Spec. 1426). July 27.

Coal Handling Switchgear (440 volt.), for Bunnerong Power Station (Spec. 1440). Aug. 10.

Compressor Switchboard (440 volt.), for Bunnerong Power Station (Spec. 1441). Aug. 10.

Insulators and Fittings, for Outdoor Service (Spec. 1435). Oct. 12.

Metal Clad Neutral Switching Equipments, 6000 volt, for sub-stations (Spec. 1418). August 10.

Metal Clad Switchgear (11,000 volt, 250 MVA), for City Sub-station (Spec. 1382). August 17.

Metal Clad Switchgear (33,000 volt.), for Homebush Sub-station (Spec. 1403). Aug. 17.

Miscellaneous Steel Work, for Switchgear. July 26.

Motor Driven Vacuum Cleaning Plant and Piping, fixed type, for Bunnerong "B" Power Station (Spec. 1402). Aug. 10.

Oil Immersed Fuse Switches, 11,000 volt. (Spec. 1421). Sept. 28.

Outdoor Combined Switches and Fuses, 11,000 volt, high rupturing capacity (Spec. 1420). Aug. 31.

Power Transformers (45 MVA), for Homebush Sub-station (Spec. 1419). Aug. 31.

Precision Lathe, 8 inch swing, and Accessories (Spec. 1425). Sept. 7.

Substation Relay Group Equipment, for City A.C. Network Signal Equipment (Spec. 1408). Aug. 17.

Telephone Cable (2,300 yards). Aug. 8.

Trailer Caravans (12), two wheels (Spec. 1436). Aug. 3.

Trench Excavators (3), Diesel or petrol engine driven, self propelled (Spec. 1437). Aug. 3.

Vacuum Cleaning Plant, fixed type, motor driven, for Pyrmont "B" Power Station (Spec. 1429). Aug. 10.

Vacuum Cleaning Plant, motor driven, fixed type, for Pyrmont "B" Power Station (Spec. 1402). Aug. 10.

MISCELLANEOUS.

Air Break Isolating Switches (77), 33,000 volt., for Newcastle City Council. July 31.

Boiler Feed Pumps, for Clarence River County Council. July 25.

Electrical Material — Copper Cable, Insulators, Switchgear, Lightning Arresters and Ironmongery, for Municipality of Campbelltown. July 24.

Generating Set, comprising the following: Vertical Totally-enclosed Marine (D.R.S.), 2-stroke 4-cylinder, Cold Starting Crude Oil Engine, B.H.P. 110 at 500 R.P.M.; Direct-coupled Alternator, 3-phase, 4-wire, 415-240 Volts., 50-cycle, Generators at 68.5 K.W.; Exciter for the above; Switchboard, complete with Current Transformers and Switchgear; Fuel Tank, with all accessories. Purchase of, from Municipality of Cohar. July 26.

Grass Cutting Machine, motor sickle type, for Municipality of Drummoyle. July 24.

Motor Road Grader, 10 ft. blade, complete with scarifier, approx. 8-10,000 lb., for Municipality of Narromine. July 31.

Outdoor Static Transformers (3), 250 K.V.A., 11,000/415-240 volt, 3 phase, for St. George County Council. Aug. 1.

Overhead Type Loader, prefer pneumatic tyres, for Municipality of Wingham. July 26.

Portable Air Compressor of "one hammer" capacity, trailer mounted on pneumatic tyres, for Municipality of Inverell. July 23.

Pumps, Borehole or Submersible, for Shire of Shoalhaven. Extended to July 24.

Regulating Valves (57), for pipe lines and reservoir control, for Central Tablelands County Council. July 24.

Speed Patrol Grader, Purchase of, from Municipality of Wingham. July 22.

Transformers, 3 phase, 22,000 volt., for Monaro County Council. Aug. 5.

(Turn to page 75.)

The Most Extensive Manufacturers
in the British Empire of
**RUBBER STAMPS,
INKS, STENCILS,
MARKING DEVICES,
ACME STAMP PADS**
OFFICE AND STATIONERY SUPPLIES



We also Manufacture and
Supply a Complete Line of
**LIMEWASHING AND
SPRAYING MACHINES**
FOR ALL PURPOSES

Let us know your requirements
and we will quote by return.

WRITE FOR OUR GENERAL CATALOGUE
EXCELSIOR SUPPLY CO. PTY. LTD.

HEAD OFFICE:
100 BROADWAY, SYDNEY, N.S.W.
30 Victoria Street, WELLINGTON, N.Z.



*Don't lose
your
TEMPER!*

GAIN THE ULTIMATE IN MODERN HEAT TREATMENT

- NO SCALING
- NO DISTORTION
- UNIFORM STRENGTH
and HARDNESS
- LOW COSTS
- QUICK SERVICE

Small Metal Parts... STAMPINGS,
SPRINGS, PINS, CLIPS, ETC., are
HEAT TREATED, better, cheaper,
quicker.



G. N. RAYMOND LIMITED

6 Eassey Street, Collingwood, N.S., Vic.
PHONE JA2181

CURRENT TENDERS - contd.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

- Control Equipment. August 9.
- Pneumatic Concrete Vibrators. Aug. 9.
- Portable Concrete Mixers. Aug. 9.
- Radial Drilling Machine. Aug. 18.

- Sectional Water Tanks and Towers. July 26.
- Slotting Machine. Aug. 16.
- Supervisory Control Equipment, Control Desk Key Panels and Diagram Panels. Aug. 9.
- Switches and Bus-Bar Supporting Insulators. Aug. 2.
- Switchgear, 2,200 volt. July 26.

COMMONWEALTH RAILWAYS DEPARTMENT.

- Axle Lathe, double ended. Sept. 3.
- Heat Storage Cookers. July 25.

CITY OF MELBOURNE.

- Air Conditioning Plant (Spec. 728/E). Aug. 21.
- Low Tension Junction Boxes (Spec. 728/E). Extended to July 24.

DEPARTMENT OF PUBLIC WORKS.

- Gas Hot Water System, for Belmont. July 25.

MELBOURNE AND METRO- POLITAN BOARD OF WORKS.

- Steel Plate (2,440 tons). Aug. 1.

DEPARTMENT OF WORKS AND HOUSING.

- Extensions, for Hot Water Service, for Highett. Aug. 1.
- Nails (46½ tons), various types and sizes. Aug. 15.
- Oil Burning Installation, for Parkville. Aug. 1.

MELBOURNE AND METRO- POLITAN TRAM- WAYS BOARD.

- Pinions, for Air Compressors. July 24.

POSTMASTER-GENERAL'S DEPARTMENT.

- Fork Lift and Platform Trucks (Sch. V.375). July 25.
- Galvanised Steel Wire Rope (Sch. 373). July 25.
- Power Hammers, power operated (Sch. 377). Aug. 1.
- Refuse Bins (Sch. V.369). July 25.

- Steel Sorting Presses (Sch. V.374). July 25.

- Transformer Oil Filtration Plant (Sch. V.368). Aug. 8.
- Tracked Back Filling Machines (Sch. V.372). July 25.

STATE ELECTRICITY COM- MISSION.

- Automatic Telephone Apparatus (Spec. 50-51/13). Aug. 2.

- Automatic Telephone Apparatus (Spec. 50-51/38). Aug. 14.

- Belt Conveyor System (Spec. 50-51/4). Extended to Aug. 30.

- Construction Winches, elect. driven (Spec. 50-51/37). July 25.

- Control Cable, V.R. or P.C.I. (Spec. 50-51/1). Aug. 14.

- Distribution Transformers, 6,000 volt. and 22,000 volt. (Spec. 50-51/19). Sept. 27.

- Evaporative Cooling and Warm Air Heating System (Spec. 50-51/31). July 26.

- Evaporative Cooling and Warm Air Heating, Lavatory Ventilation and Hot Water Systems, for South Melbourne (Spec. 50-51/34). Aug. 2.

- Induced Draft Fans, Steel Flues, Dust Eliminators and Structural Steel Housing (Spec. 50-51/5). Aug. 16.

- Mobile Cranes (5), 6 ton (Spec. 50-51/17). July 26.

- Outdoor Switchgear and Accessories, 66,000 and 22,000 volt. (Spec. 50-51/6). Aug. 14.

- Switchgear (250,000 volt.) and Accessories (Spec. 49-50/251). Extended to July 28.

- Transformers (66 kv. and 22 kv.), (Spec. 49-50/3). Sept. 13.

STATE RIVERS AND WATER SUPPLY COMMISSION.

- Hot Water Boilers (5). July 25.

MISCELLANEOUS.

- Diesel Electricity Generating Set (75 KVA), with Diesel engine, alternator, exciter and switchboard with meters. Purchase of, from Municipality of Bourke. Aug. 6.

- Pick Up Street Sweeping Machine, for City of Adelaide. July 25.

- Water Filtration and Purification Plant:—Flocculating and Sludge Scraping Mechanisms; Filter Control Valves; Rate Controllers, Indicators, and Connect.

(Turn to page 74.)

SPECIAL SMALL HEAD PIECES ..

Cheese Head Bolts and Screws . . .

Deck Spikes . . . Handle Pins . . .

in steel, copper, brass, etc., 1/16 in. to 1/2 in. in diameter and up to 60 in. long. Designers, engineers and manufacturers are invited to avail themselves of the wide experience of our technical staff for suggestions to simplify production, reduce costs and improve performance.

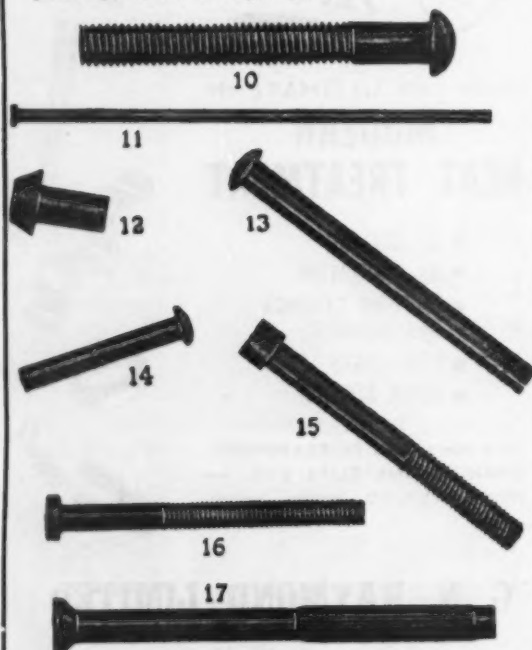


Illustration No. 8.

Any like product made to sketch, sample or order by

Steelcraft

Pty. Ltd.

206-210 Willoughby Road, Crow's Nest, Sydney, N.S.W.

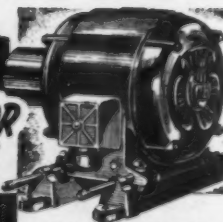
Telephone: XB 6461

DOWNIE

for the **RIGHT MOTOR**
at the **RIGHT PRICE**

S. & E. DOWNIE PTY. LTD.

The Electric Motor Firm
7 REGENT ST. REDFERN, N.S.W.
Telegrams: "Downies," Sydney



MX 3371

CURRENT TENDERS - contd.

ing Pipework; C.I. Pipes and Fittings, for Treatment Plant Units; Chemical Dry Feeders, etc.; Solution Mixing Equipment, Chlorinator Equipment, etc., for Mildura Urban Water Trust. Extended to July 24.

QUEENSLAND

STATE ELECTRICITY COMMISSION.

Power House Switchboards (Spec. 195). Aug. 9.
Steam Turbo Alternators (Spec. 200). Aug. 20.
Steam Turbo Alternator (Spec. 196). Aug. 18.
Water Tube Boilers (Spec. 200). Aug. 20.

MISCELLANEOUS.

Cables, 11,000 volt, and 600 volt, for Townsville Regional Electricity Board. July 28.
Engine-driven Alternator Sets (2), 750 KW, complete, for Cairns Regional Electricity Board. Oct. 11.
Earth Moving Equipment, for Bowen Town Council. July 29.
Water Pipes, Special C.I. Water Pipes, Valves and Valve Boxes, for Maryborough City Council. July 28.

SOUTH AUSTRALIA

GOVERNMENT RAILWAYS DEPARTMENT.

Acid Tanks (30), 4,500 gall. Aug. 10.
Steel Freight Containers (54). July 27.

SUPPLY AND TENDER BOARD.

Air Conditioning Equipment (18 Sets). July 31.
Brass Radiator Tubing, Seamless Drawn. July 24.
Galvanised Iron, Corrugated, 130 tons; flat, 28 tons. July 31.
Planing and Moulding Machine, 6 headed T.E. July 24.
Planing and Moulding Machine, 6 headed. July 31.
Precision Lathes (2), all geared, high speed. July 24.
Precision Metal Shaping Machine. July 24.
Steel Sleepers, 100,000; Bolts and Nuts, 400,000; Spring Washers and Cast Steel Clips, 400,000 of each. July 24.
Universal Milling Machine. July 24.

ADELAIDE CITY COUNCIL.
Pick Up Street Sweeping Machine. July 28.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

C.I. Sluice Valve (36 inch), for Wellington Dam. Aug. 24.

(Turn to page 17.)

ELEVATORS and CONVEYORS



GRAIN ELEVATOR BOOT
Capacity: 300 tons per hour

ROBERT BODINGTON Pty. Ltd.
Engineers

Queensberry and Leicester Streets,
Carlton, Melbourne, Victoria.
Established 1854

COAL & COKE

for
Manufacturers, Blacksmiths,
etc.

BEST STEAMING COAL
for all classes of Boilers and
Household purposes

PROMPT DELIVERY

JONES BROS. COAL
PTY. LIMITED

Bridge Road, Pyrmont,
N.S.W.
Phone: MW 2891 (5 lines)

CHEMICAL TANKS, DRUMS, CONTAINERS

coated against Acids
and Alkalies

Articles of all Shapes and
sizes **PLASTIC COATED**

J. & F. BROCK

STOVE ENAMELLERS
5 Inkerman Street, St. Kilda
Vic. Tel: LA 1437.

Industrial Minerals

and
Siliceous Abrasives

Laboratory Standardised,
Ground and Processed to
Specification by

Austral Rock Milling
Pty. Ltd.

GLADSTONE STREET
NEWTOWN, N.S.W.
Phone: LA 2502

HARD CHROME PLATING for Building Up DIES, GAUGES, SHAFTS

Woodward & Thurston Pty. Ltd.
208 St. John's Road, GLEBE
SYDNEY, N.S.W.
Phone: MW 2571 (2 lines).

CURRENT TENDERS - contd.

C.I. Sluice Valve (21 inch), for Wellington Dam. Aug. 24.
Cast Steel Manganese Steel Crossings, for Railways. Sept. 14.
Diesel Mechanical Locomotives (18). Extended to Aug. 17.
Diesel Electric Main Line Locomotives (48). Extended to Aug. 24.
Railway Wagons, for Railways Dept. Sept. 7.
Steel Rivets, for Railways. July 20.

TASMANIA

HYDRO ELECTRIC COMMISSION.

Automatic Self Closing Valves (5), 90 inch diameter. Aug. 1.
Plant and Equipment: Conveyor Belt Idlers and Equipment; Conveyor Belts; Vibrating Screens and Electric Motor Driven Concrete Pump. July 26.

MISCELLANEOUS.

Miscellaneous Piping, Cast Iron, Asbestos Cement, or Mild Steel Pipes, for the Trunk Mains; Valves for Trunk Mains; Cast Iron Pipe Specials for Main from Lindisfarne to Bellerive; Cast Iron or Asbestos Cement Pipes for Lindisfarne, Montague Bay, and Bellerive Reticulation; Valves for Reticulation Mains at Lindisfarne, Bellerive, and Montague Bay; Cast Iron Pipe Specials for Lindisfarne, Montague Bay, and Bellerive Reticulation, for Municipality of Clarence. Aug. 21.

Accepted Tenders

COMMONWEALTH

DEPARTMENT OF SUPPLY AND DEVELOPMENT.

Gown Cloth (Req. No. C.4/258/71). Lebel Trading Co. (Aust.) Ltd., £1,458/6/8.

CHEMICALS—DRY COLOURS, RAW MATERIALS FOR INDUSTRY

H. BLEAKLEY & COY.
(1910) PTY. LTD.
397-399 KENT ST., SYDNEY.
Phone: BX 5761, BX 5762

Melbourne Office: H. Bleakley & Company (1910) Pty. Limited, C/o Agg & Duff, 15 Queen Street, Melbourne.
Phone: MU 5128.
DRUGS • FINE CHEMICALS POWDERED METALS

Overcoating (Req. No. C.4/259/57). Tweed Side Manufacturing Co. Ltd., £8,214/7/6.

Blue Serge (Req. No. C.4/259/58). Daylesford Woollen & Worsted Mills Pty. Ltd., £14,503/2/6.

Grey Blankets (Req. No. C.4/267/37). Midland Textile Mills, £32,083/11/10.

Voltage Regulator (Req. No. C.4/307/200). H. Rowe & Co. Pty. Ltd., £228.

Radius, Portable, Universal. Radial Drilling and Tapping Machine (Req. No. C.4/313/204). Gilbert Lodge & Co., £1,830.

Bandaw, 36 in. (Req. No. C.4/313/210). Thornley & Sons Pty. Ltd., £22/15/-.

Shockproof Indicators (Req. No. C.4/313/214). William Adams & Co. Ltd., £285.

Soyer Steve Bodies (Req. No. C.4/306/105). Forbec Industries, £240/18/7.

Shackman Auto-Cameras (Req. No. C.4/373/77). H. B. Selby & Co. Pty. Ltd., Rates.

Aircraft Wheel and Brake Spares (Req. No. Cr. 601/62). Dunlop Rubber (Aust.) Ltd., £13,701/7/5.

Portable Geiger Counters (Req. No. C.4/316/137). Austronic Engineering Laboratories, £270.

Kelvinator (Req. No. C.4/317/20). Kelvinator (Australia) Ltd., £360.

Manual Lincoln Weld Semi-Automatic Welding Machine (Req. No. Cr.325/18). Lincoln Electric Co. (Aust.) Pty. Ltd., £1,160.

Metallising Gun (Req. No. C.4/350/43). Brown & Dureau Ltd., £550.

Sulphur (Req. No. C.4/161/153). British Phosphate Commissioners, £60,000.

Fallets, Box Wood Standard (Req. No. C.4/162/88). Strand Manufacturing & Agency Co., £493/4/8.

Black Leather Shoes, with Laces (Req. No. C.4/204/35). Densil Don Pty. Ltd., £1,379/3/4.

Gloves, Leather, Reinforced, Men's (File No. C.4/208/7). V.B.N. Sales & Service Pty. Ltd., £420/16/8.

Trousers, Drill, Khaki Self-Supporting (File No. C.4/251/24). M. & M. Johnston, £1,326/5/8.

Trousers, Service Dress (File No. C.4/252/28). Ruttex Pty. Ltd., £2,017/3/4.

Counterpanes, Hospital (File No. C.4/259/75). Rosenthal & Co., £445.

Flush Type Wheel Alignment Outfit (File No. C.4/302/99). Replacement Parts Pty. Ltd., £239/3/6.

Tins, 1 Gallon (File No. C.4/360/38). Wm. Horsfall Pty. Ltd., £645/16/8.

Pins, Rolling, 30 in. Wooden (File No. C.4/175/166). F. Rojo & Sons Pty. Ltd., £67/1/8.

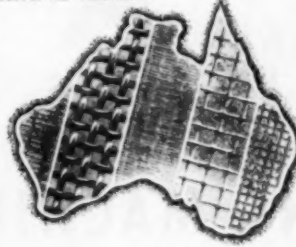
Powder, D.D.T. (File No. C.4/180/41). Taubmans Pty. Ltd., £54/10/10.

Badges, Woven (File No. C.4/253/57). J. & J. Cash, Australian Weaving Co. Pty. Ltd., £681/3/4.

Cotton Waste (File No. C.4/261/4). C. & S. Industrial Textiles Pty. Ltd., £294/10/-.

(Turn to page 78.)

Covers all Australia



WOVEN

Wire Gauge

of every description
manufactured in steel,
galvanised, brass,
copper, monel, tinned,
bronze, stainless steel,
silver.

For Mining Screens, Quarries, Harvesters, Grading Metal, Barley, Malt, Flour, Petrol.

WIRE WORK OF EVERY DESCRIPTION

Such as Baskets for Annealing, Heat Treatment, Plating and all types used in manufacturing Oven Racks, Griller Grids, Ice Chest and Refrigerator Trays—Hosiery Machine Belts, "Melwires" Ties.

TUBE AND PIPE WORK

Guards for Windows and Machinery, Chain Link Netting for Tennis Courts, Fencing, Partitions and Industrial Hand Trolleys. Conveyor Belts in all metals for all manufacturing purposes.

MELBOURNE WIRE WORKS

95-99 CREMORNE STREET RICHMOND VICTORIA

EST. 1852

Phone: JB 2841 (5 lines)

Telegrams and Cables: "Melwirworks"

Save—

**WEAR ON BEARINGS
AND COSTLY MAINTENANCE
THROUGH ...**

Dynamic Balancing

LIKE THIS

FOR EXAMPLE

• The cost of doing without dynamic balancing is the cost of high machine maintenance and impaired output and overall efficiency.

The forces set up by out-of-balance rotating parts play havoc with bearings ... set up excessive strains on machine frames ... cause vibrations injurious both to machine and quality of machine product.

Our Service, for machine builders and plant engineers, is available for accurate dynamic balancing of all types of machine parts, electric motors and generators.

We shall be pleased to supply further information without obligation.

JONES & RICKARD PTY. LTD.

MANUFACTURERS OF SPECIALISED ELECTRICAL EQUIPMENT
525 ELIZABETH STREET, SYDNEY. MX2097



VICTORIA U2 MILLING MACHINE

SPECIFICATIONS

TABLE:

Working Surface, 46in. x 10 1/4in. No. of Slats, 3. Longitudinal Power Feed, 33in. Transverse Power Feed, 10in. Vertical Power Feed, 16in. No. of Feeds, 12. Feed Range (Longitudinal), 222-8.86 ins./min. Feed Range (Transverse), 333-13.45 ins./min. Feed Range (Vertical), 17-6.72 ins./min. Swivel of Table to each side, 45 deg.

SPINDLE:

Taper in Spindle, B53 1/2. No. of Speeds, 12. Range of Speeds, 25-900 R.P.M.

GENERAL:

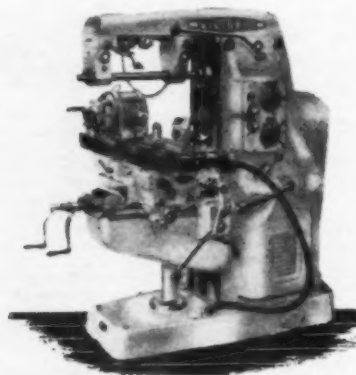
Dividing Head Centre Weight, 4-3/4. Net Weight, 3,360 lb.

STANDARD EQUIPMENT:

1in. Diameter Cutter Arbor, complete with Spacing Collars, Arm Braces, complete Coolant Equipment, set of Spanners, Grease Gun.

EXTRA EQUIPMENT:

4 3/4 Universal Dividing Head, set of Change Gears, Change Wheel Guard, Vertical Milling Attachment, Slotting Attachment, Circular Table, Swivelling Machine Vice, etc.



Call at our Showrooms and inspect this latest British machine

VICTORIA: FRANK VIAL & SONS PTY. LTD., 369 Queen Street, Melbourne. FJ 1658.
N.S.W.: CLEVELAND MACHINERY CO. PTY. LTD., 195 Cleveland Street, Redfern. MX 3594.
S.A.: LAPHORNES LIMITED, 232 Victoria Square, Adelaide. C 4457.

FY-9-HHP

Accepted Tenders - Continued

Cranes (File No. C4/306/24). Victorian Industrial Sales & Service Pty. Ltd., £4,390.

Fork Lift Trucks (File No. C4/311/12). Lawton Industrial Trucks Ltd., £17,121/9/5; Queen's Bridge Motor & Engineering Co. Pty. Ltd., £23,341/10/-.

Round Naval Brass Rods (File No. C4/371/290). Austral Bronze Co. Pty. Ltd., £1,527/13/6.

Electric Cables (Req. No. C4/307/97). Cable Makers (Aust.) Pty. Ltd., Gilbert Lodge & Co. Ltd. Rates.

Wheel Assembly, Truck, Single and Double Flange (Sch. 2780).

Tutt, Bryant (S.A.) Ltd., £327/1/-.

Wooden Cases (Sch. 2728). Commercial Case Co., £460.

Fire Extinguishers, 35 gallon, "Wormald" (Sch. 2590). J. T. Sandow Ltd., £220.

Containers, No. 1 Type "C" and Type "D". Perry Engineering Co. Ltd., £8,818/15/-.

Harmonic Generators, Pulse Generators and Modulation and Precision Stabilized Power Supply (Sch. C4/316/86). M. Brodribb, £651/6/-.

Chart Rolls, for Marconi Level Recorder and Centel Micro-second Counter Chronometer (Sch. 2040). Amalgamated Wireless (Aust.) Ltd., £885.

Air Compressors (Sch. 2463). Ingersoll Rand (Aust.) Pty. Ltd., £227/14/4.

Electrical Connectors (Sch. 2633). Aeronautical Supply Co. Pty. Ltd., £942/9/-.

Magslip Instruments (Sch. 2447). Watson, Victor Ltd., £3,190/3/7.

Drafting Machines and Scales (Sch. 2742). Harding & Halden Pty. Ltd., £381.

Marmite (Sch. 2889). Sanitarium Health Food Company, £287/11/11.

Garden Rubber Hose (Sch. 2827). Dunlop Rubber (Aust.) Ltd., £231/11/3.

Toolmaker's Microscope, with Basic Equipment, etc. (Sch. 2628).

William Adams & Co. Ltd., £909/4/9.

Fibre Mattresses (Req. No. 859/49). J. Gadsden Pty. Ltd., £238/15/-.

Clothing (Req. No. 132/50). G. & R. Wills & Co. Pty. Ltd., £308/3/3.

Kelvinator Water Cooler (Req. No. 50/50). Nicholson's Ltd., £248/10/-.

Axe Handles, Deck Scrubbers (Req. No. 241/50). Harris, Scarfe & Sandovers Ltd., £242/10/3.

B.D.H. Kerosene Room Heaters (Req. No. C4/366/133). B.D.H. Industries Ltd., £323/11/7.

Service Dress Trousers (Req. No. C4/232/39). Friese Bros., £1,739/10/-.

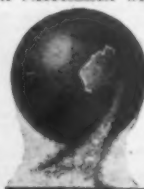
(Turn to page 79.)

MINERALS PTY. LTD.

318 Botany Road, Alexandria, Sydney, N.S.W.
Currie Street, Adelaide, S.A., and Perth, W.A.

Cable Address: "MINERALER," all States.

In Association with



MINERALS (VIC.) PTY. LTD.

Ingles Street West, Port Melbourne, Vic.
And 27 Elizabeth Street, Hobart, Tas.

Industrial Earths and Wood Flour Millers.

Mineral Earths & Pigments

OCHRES

For all Industries

Accepted Tenders—Continued

Service Dress Jackets (Req. No. C4/252/40). W. Ludgate, £1,620/16/-; Finsbury Clothing Co., £810/8/4.

Brake Unit (Req. No. C4/301/64). Dunlop Rubber (Australia) Ltd., £299/12/6.

Passenger Buses (Req. No. C4/303/102). Nuffield (Aust.) Pty. Ltd., £7,108/2/6.

Land Rover Vehicles (Req. No. C4/303/122). Regent Motors Pty. Ltd., £4,708.

Humber Super Snipe Saloons (Req. No. C4/303/123). Rootes Ltd., £2,319.

Planing Machine (Req. No. C4/313/95). McPherson's Ltd., £10,080.

Screwing Machine (Req. No. C4/313/209). McPherson's Ltd., £319.

Electrical Equipment (Req. No. C4/313/219). A. E. Supplies Pty. Ltd., £538.

Lathe (Req. No. C4/313/229). Alfred Herbert (A'asia) Pty. Ltd., £2,709/18/-.

Ammeters (Req. No. C4/316/103). University Graham Instrument Co., £219/7/6.

Valves (Req. No. C4/316/138). Standard Telephones & Cables Pty. Ltd., £359.

Tomato Sauce (File No. 50/1775). Lea-Perrins Pty. Ltd., £299/8/9.

Motor Cycle, complete with Sidecar (File No. 50/1849). Bennett & Wood Pty. Ltd., £221/16/8.

Stock Butts, for Sporting Rifle (File No. 50/2201). Slazengers (Aust.) Pty. Ltd., £10,500.

Spares. Ingersoll-Rand, Compressor (File No. 50/2426). Ingersoll-Rand (Aust.) Pty. Ltd., £297/3/-.

Bags, Kit, Proofed (File No. 50/168). Anthony Hordern & Sons, £1,615.

Steel Durax and Duraflex (File No. 50/2389). The Broken Hill Pty. Co. Ltd., £610/16/-.

Paint, Light Grey, Full Gloss (File No. 50/742). Lewis Berger & Sons (Aust.) Pty. Ltd., £6,692/19/4.

3-Gall. Spirit Jars (File No. 50/1311). R. Fowler Ltd., £504/3/4.

Paint (File No. 50/1549). Lewis Berger & Sons (Aust.) Pty. Ltd., £627/8/3.

Solder (File No. 50/1851). O. T. Lempriere & Co., £532/17/6.

Canisters, Aluminium (File No. 50/420). Holder, Stroud Pty. Ltd., £761/5/-.

Cigarettes and Tobacco (File No. 50/2739). W. D. & H. O. Wills (Aust.) Ltd., £627/1/5.

High Tensile Alloy Steel (File No. 50/2497). Eagle Globe Steel Co. Ltd., £287/15/-.

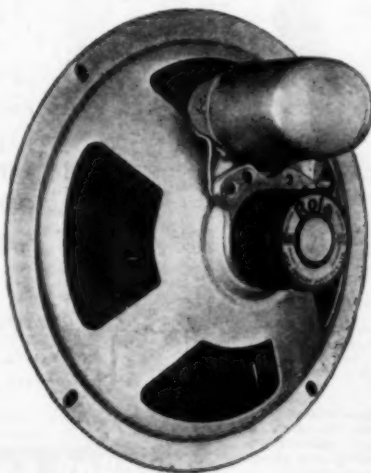
Hargans, Mobile and Circular Saws (File No. 50/2558). Dangar, Gedye & Malloch Ltd., £239/17/3.

Padlocks, "Lockwood" (File No. 50/523). Ogden Industries Pty. Ltd., £555/8/9.

Jam (File No. 50/2192). Aust. Consolidated Indust. Investments Pty. Ltd., £529/10/1.

Castings, for Repco Boring Bars (File No. 50/2126). McLean Castings Ltd., £386.

(Turn to page 80.)



ROLA

The World's Finest Loudspeaker

For the past 20 years Rola loudspeakers have been accepted as a standard by Australia's leading radio receiver manufacturers, to whom the name Rola has become synonymous with the best in sound reproduction. To-day, more than four-fifths of Australian radio sets are Rola equipped.

☆ ROLA Magnet Winding Wire

This year the Rola Magnet Winding Wire plant celebrates its 10th birthday and the passing of the 12,000,000 pounds milestone in the production of the highest quality enamel and fabric covered wires for the radio and electrical industries.

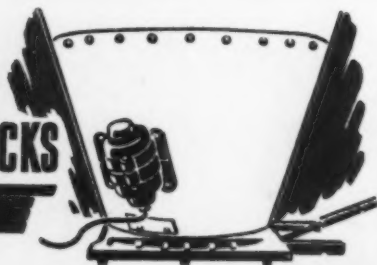
☆ ROLA Magnet Alloys

The research of skilled physicists is allied with practical engineering know-how and the latest production techniques to develop the range of Rola permanent magnet alloys which find such widespread use in industry.

ROLA CO. (AUST.) PTY. LTD.

The Boulevard, Richmond, Victoria; and 116 Clarence Street, Sydney

**NO
BOTTLENECKS
HERE...**



Allam ELECTRIC "TRILLOR" VIBRATORS



Uses include:

- Maintaining free flow of loose materials in hoppers, feeders, chutes, screens, conveyors, etc., in hundreds of manufacturing processes.
- Ensuring consolidation of powders or loose materials in drums, bags or packets—to speed up packaging and permit use of smaller containers.

EASILY FITTED TO ANY SURFACE

Enquire from your State Distributor:

N.S.W.: Britland Distributors Ltd., 88-90 Gardeners Road, Mascot.
VIC.: British Standard Machinery Co., 664 Bourke Street, Melbourne.
QLD.: Barker & Co. Ltd., 87-89 Eagle Street, Brisbane.
TAS.: Charles Davis Ltd., 66-68 Elizabeth Street, Hobart.
S.A.: William Adams & Co. Ltd., 187 Waymouth Street, Adelaide.

AVI.10

Accepted Tenders—Continued

Spares, for "Baker" Electric Lift Trucks (File No. 50/2685). Noyes Bros. (Sydney), £1,252/19/6.
Racks, Standard Steel (File No. 50/2589). N. P. Nielsen & Co., £333.

Cameras, 35 m.m. (Req. No. C.4/376/35). H. B. Selby & Co. Pty. Ltd., £237.

Paper Sanitary Rolls (Req. No. C.4/197/93). Andrew Jack Dyson Pty. Ltd., Sands & McDougall Pty. Ltd., Rates.

Lint Absorbent and Silk Oiled (Req. No. 813). Greenhalghs Ltd., £500/12/6.

Instrument Sterilizers (Req. No. 813). Hecla Electrics (Sydney) Pty. Ltd., £349/8/-.

Absorbent Cotton Wool (Req. No. 813). Townson & Mercer (Aust.) Pty. Ltd., £268/9/-.

Grinding Wheels (Req. No. C.4/151/10). McPherson's Ltd., £436/8/9.

Sealed, Braided Whistle Lanyards (Req. No. C.4/163/16). T. G. Glover Pty. Ltd., £620/5/7.

Socket Adaptors, Spanners (Req. No. C.4/171/60). Motor Parts & Service Ltd., £1,392/10/4.

D.D.T. Emulsion (Req. No. C.4/180/55). Tredmar Chemical Products, £449/0/3.

Cleaning Bags (Req. No. C.4/250/88). J. A. Witter & Co., £500.

Black Moulded Plastic Buttons (Req. No. C.4/253/56). General Plastics Ltd., £367/0/8.

Weaved Labels (Req. No. 253/56). Cash Australian Weaving Co. Pty. Ltd., £353/2/6.

Wire Stretchers (Req. No. 827). Newlands Bros. Pty. Ltd., £254/5/-.

Oil Balze, 45 inches (Req. No. 830). C. C. Rawson Pty. Ltd., £565/10/-.

Chill Mould, for Concave (Req. No. C.4/371/245). David Duncan, £250/9/8.

Black Hot Rolled Annealed Bar (Req. No. C.4/371/284). Commonwealth Steel Co. Ltd., £1,568/14/-.

Inter-Support Rings (Req. No. C.4/371/322). W. A. Buchanan Pty. Ltd., £450.

Rear Rings (Req. No. C.4/371/322). F. W. Code, £332.

Fuse and Detonator Unions (Req. No. C.4/374/14). Crusader Plate Co. Pty. Ltd., £761/14/-.

Bradman Addressing Machines (Req. No. C.4/375/10). Spicers (Australia) Ltd., £288/3/-.

Singer Sewing Machine, Treadle Drophead (Req. No. C.4/377/14). Singer Sewing Machine Co., £337/17/6.

Comet Chasses (Req. No. C.4/303/95). Leyland Motors Ltd., £17,980.

Brass Bar (Req. No. C.4/371/287). Austral Bronze Co. Pty. Ltd., £385/8/4.

Securing Ring (Req. No. C.4/301/66). Galloway's Panel Works, £261.

Ashtrays (Req. No. C.4/189/38). Rex Aluminium Co. Pty. Ltd., £3,119/3/4.

Cordage (Req. No. C.4/163/20). J. Scott Pty. Ltd., £1,706/15/11; A.



ANCHOR

TRIPLE GEARED
PULLEY BLOCKS
HALF TON HIGH-
SPEED BLOCKS
GIRDER TROLLEYS
HAND WINCHES
STACKERS
LIFTING TRUCKS
JACKS, RACK AND
PINION TYPE
(ALL STEEL)

Obtainable from Leading Merchants



ANCHOR ENGINEERING CO. PTY. LTD.

91 CROWN STREET, RICHMOND, VICTORIA TELEPHONE: JA 2500
TELEGRAMS: ANCHOR, ENGINEERING, RICHMOND, VIC.

JOHNSON & GASTON PTY. LTD.

Sole representatives for SYDNEY, MELBOURNE, ADELAIDE, PERTH and CHRISTCHURCH, N.Z.

Write for New 24-Page Catalogue

Forasynth & Co., Pty. Ltd., £1,746/19/5; M. Donaghy & Sons Pty. Ltd., £1,850; James Miller & Co. Pty. Ltd., £2,340/3/3; Geo. Kinnear & Sons Pty. Ltd., £2,372/19/6; Adelaide Rope & Nail Co. Ltd., £1,853/2/6.

Camp Oval Kettles (Req. No. C.4/175/148). A. G. Way & Co. Pty. Ltd., £1,550.

Half Heavy, Black, Ankle Boots (Req. No. C.4/203/34/1). R. Graham & Sons, £278/2/6.

Flexible Line (Req. No. C.4/301/66). Paton's Brake Replacements Pty. Ltd., £213/5/-.

Morris Commercial Panel Van (Req. No. C.4/303/73). Nuffield (Aust.) Pty. Ltd., £1,843/7/-.

Morris Six, 11 Horse-power Sedan Car (Req. No. C.4/303/73). Nuffield (Aust.) Pty. Ltd., £864.

Kodagraph Paper (Req. No. C.4/373/80). Kodak (Australasia) Pty. Ltd., £338/10/2.

Nitric Acid (Req. No. C.4/161/48). Commonwealth Fertilizers & Chemicals Ltd., £242/8/-.

Flush Type Wheel Alignment Outfit (Req. No. C.4/302/99). Replacement Parts Pty. Ltd., £239/3/4.

Brooms and Brushes (Req. No. 241/50). W. A. Brushware Ltd., £261/13/6.

Cleaning Bags (Req. Nos. 749 and 262/49). Cotton Traders of Australia, £269/7/3.

Wooden Cots (Req. No. 242/60). Joyce Bros. Ltd., £537/1/3.

Basins, Bowls and Flasks, Stainless Steel (Req. No. 798). Townson & Mercer, £201/12/7.

Manganese Bronze Billets (Req. No. 800). Austral Bronze Co. Pty. Ltd., £201/5/-.

Alloy and Nickel Steel (Req. No. 802). The Eagle and Globe Steel Co. Ltd., £1,663/6/7.

Tool Boxes, for Radar Mechanics (Req. No. 803). Stammers and Patmore, £342.

"Burroughs" Electrically Operated Machine (Req. No. 806). Burroughs Ltd., £228/7/6.

Stainless Steel Sheets (Req. No. 810). Commonwealth Steel Co. Ltd., £213/7/2.

Aluminium Solder (Req. No. 811). Oerkon Manufacturing Co. Ltd., £213/7/2.

NEW SOUTH WALES

PUBLIC WORKS DEPARTMENT.

Insulators, disc-type, and fittings, £3,201. J. Gunton (Aust.) Pty. Ltd.

Aluminium Conductor, steel-cored, and accessories, £7,018, £180,482; 37/0.102, £71,580. British Insulated Callenders Cables Ltd.

(Turn to page 81.)

Accepted Tenders—Continued

Passenger Lifts, etc. operated, two, £10,887. Otis Elevator Co. Pty. Ltd.

H.W. Services, Convalescent Hostel, Tomaree, £1,194. A. H. Rippon.

New Boiler House, State Hospital, Lidcombe, £10,855. Hutcherson Bros. Pty. Ltd.

Steam Raising Plant, Royal Alexandra Hospital for Children, £37,654. Babcock and Wilcox of Aust. Pty. Ltd.

Deep X-ray Therapy Equipment, Royal Prince Alfred Hospital, £5,067. Watson, Victor Ltd.

GOVERNMENT RAILWAYS DEPARTMENT.

Structural Steel, for Lake Macquarie Power Station (Spec. No. 496). Sir William Arrol & Co. Ltd., £447,687/8/4.

Double Rotating and Reclining Seats (169), for Equipping 7/4 Car Diesel Trains, to Spec. 2300. Commonwealth Eng. Co. Ltd., £32,125.

Drop Forging Dies. Commonwealth Eng. Co. Ltd., £1,500.

DEPARTMENT OF MAIN ROADS.

Gully Gratings and Frames. Mascot Engineering Co., £99.

Steel. Stewarts and Lloyds (Aust.) Ltd., £40/4/1.

Plywood. Leopold Barnett Pty. Ltd., £33/12/6.

Metal Cutting Bandsaw. Demco Machinery Co. Pty. Ltd., £13; Eagle & Globe Steel Co. Ltd., £40. Survey Instruments. E. Esdaile & Sons Pty. Ltd., £216; Precision Instrument Co., £940.

Mobile Loaders. Malcolm Moore (N.S.W.) Pty. Ltd., £13,364; Whyte Hall British Products Pty. Ltd., £3,044.

Air Compressor. Knox, Schlapp Pty. Ltd., £198.

Late Open Tenders

COMMONWEALTH

DEPARTMENT OF SUPPLY AND DEVELOPMENT.

Aluminium Bar. Aug. 1.
Diesel Electric Generating Equipment. Sept. 5.
Lubricants, etc. Aug. 3.
Radio Beacon Equipment. Sept. 5.

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Electric Lamps. Aug. 9.
Electrical Cables, Wires, etc. Aug. 9.
Electrodes and Welding Wire. Aug. 2.
Goggles, etc. Aug. 16.
Graphite Electrodes (Quot. CE-1077). Aug. 9.
Hydraulic Brake Fluid. Aug. 9.
Ignition and Distributor Spare Parts. Aug. 16.

Insulating Varnishes, Lacquers, Enamels, etc. Aug. 9.

Insulators and Pins, for electrical works. Sept. 6.

Lubricating Oil, for Petrol and Diesel Engines. Aug. 9.

Machinery Oil. Aug. 2.

Oils and Greases. Aug. 9.

Rectifier Units (4,000 KW) and Energy Dissipating (Spec. 1253). Extended to Sept. 6.

Special Alloy Castings. Aug. 18.

Telephones and Fittings. Aug. 2.

Wire Netting and Wire Work. Aug. 9.

Wood and Steel Split Pulleys. Aug. 9.

DEPARTMENT OF MAIN ROADS.

Concrete Pipes. Aug. 1.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Power Operated Crane Attachment (11 tons). Aug. 22.

SYDNEY COUNTY COUNCIL.

Galvanised Pole Steps (10,000). July 28.

Malleable C.I. Strain Clamps (1,100). July 24.

Overhead Line Clamps (5,000). July 24.

Suspension Clamps (3,000). July 28.

Wooden Guy Insulators (100). July 27.

MISCELLANEOUS.

Motor Patrol Grader, approx. 5-6 tons, for Shire of Weddin. Aug. 9.

QUEENSLAND

GOVERNMENT RAILWAYS DEPARTMENT.

Diesel Electric Locomotives (10). Aug. 31.

STATE STORES BOARD.

Structural Steel. July 28.

MISCELLANEOUS.

Centrifugal Water Pumps (3), electrically driven, for Ilfracombe Shire Council. July 26.

High Pressure Valves, for Cairns Water Supply Board. July 25.

Power Grader, 75-100 h.p., fully equipped, heavy power loader unit, for Rockhampton City Council. July 26.

Tractor, crawler type, with angle dozer attachment, 50-120 h.p., for Taroom Shire Council. July 24.

SOUTH AUSTRALIA

SUPPLY AND TENDER BOARD.

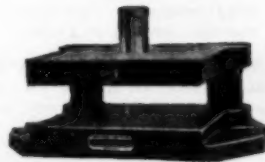
Ammeter, d.c. recording, portable; portable electric Traction Recording Meter. Aug. 21.

Bar Shoring and Bar Bending Machine, double disc. Aug. 7.

Cable, hard drawn, bare copper, 4,000 yards. Aug. 7.

Rooters, 3 tye type. Aug. 7.

JOHN HEINE



PRECISION DIE SETS FOR PRESS TOOLS Immediate Delivery

Standardized Units
ensure speedy and
accurate delivery.

Write for illustrated Bulletin 492

JOHN HEINE & SON PTY. LTD.

ALLEN STREET, LEICHHARDT, SYDNEY, N.S.W.

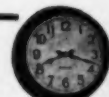
Melbourne, Adelaide and Perth: McPherson's Ltd.

Brisbane: Engineering Supply Co. of Aust. Ltd.

New Zealand: John Chambers & Son Ltd.

The I.B.M. Master TIME CLOCK SYSTEM

ensures accurate, dependable
time synchronisation between—



I.B.M. Wall
Clock.

TIME INDICATION

TIME RECORDING



I.B.M. Start-Stop
Signal.



I.B.M. Employee
Time Recorder.

TIME SIGNALLING



I.B.M. Master Clock.

IBM

INTERNATIONAL BUSINESS MACHINES PTY. LTD.
Sydney - Melbourne - Brisbane - Adelaide - Perth - Auckland

**Let us speed up your Wire and Strip
Forming on our Heenan & Froude
4 SLIDE PRESS**

**WIRE STRAIGHTENING, POINTING, AND
BARREL NICKEL PLATING**

BRADSHAW AUTOMATICS PTY. LTD.

147 CHAPEL STREET, ST. KILDA, S.E. VICTORIA

Telephone: LA 2222, (After Hours, U 9882), LA 4687.

Telegraphic Address: "BRADPINS."

SHEET METAL AND WELDING

BLUE PRINT WORK A SPECIALITY • GUILLOTINING for
the Trade • SUB-CONTRACT WORK UNDERTAKEN •
DOMESTIC REFRIGERATOR CABINETS • FLUORESCENT
LIGHTING—all Types • OXY • ELECTRIC • SPOT
WELDING

DON METALCRAFT COMPANY

9-15 Glen Street, MARRICKVILLE, N.S.W.

LL 1243

INDEX OF ADVERTISERS

Vol. XXXV - No. 1790 . . . JULY 22, 1950

Page.		Page.		Page.	
Advance Machinery Co.	42	Goodyear Tyre & Rubber Co. (Aust.) Ltd.	12	Nonporite Pty. Ltd.	68
Agnew, W. A. L., & Son Pty. Ltd.	61	Goold & Clyde Wilson Reid Pty. Ltd.	72	Oakey, J., & Son Ltd.	10
Allmet Industries Pty. Ltd.	31	Gordon Bros. Pty. Ltd.	41	Ogden Industries Pty. Ltd.	60
Amplion (Aasia.) Pty. Ltd.	66	Greatrex, B. V. H. Pty. Ltd.	66	Olympic Cables Ltd.	6
Anchor Engineering Co. Pty. Ltd.	80	Gregory & Hickey Pty. Ltd.	25	Olympic Metal Industries	61
Arup & Bruhn Pty. Ltd.	44	Grey, J. M.	60	O'Reilly, Charles	35
Associated Power Seals	62	Griffith, Hassel & Griffith	56	Ormliston Rubber Co. Pty. Ltd.	73
Austral Rock Milling Pty. Ltd.	76	Grimwood Electrical Products Pty. Ltd.	2		
Australian Forge & Eng. Pty. Ltd.	30	Gutwirth & Sons	68, 73	Philips Electrical Industries of A. Pty. Ltd.	58
Australian Gaslight Co. (Front Cover)		Heine, J., & Son Pty. Ltd.	38, 81	Phillips, Ormonde, Le Plastrier & Kelson	56
B.S.F. Pty. Ltd.	32	Henderson's Federal Spring Works Pty. Ltd.	69	Planweid Eng. Co.	36
Bellarat Litho. & Printing Co. Pty. Ltd.	60	Hipkiss Sales (A.) Ltd.	4	Poramic Enamelling Pty. Ltd.	34
Bellco Pty. Ltd.	13	Hobson Eng. Co.	34	Preha Eng. Co. Pty. Ltd.	34
Bennett Chain Co. Pty. Ltd.	74	Hodgsons Dye Agencies Pty. Ltd.	37	Proud Bros. Pty. Ltd.	71
Bleakley, H. & Co. (1910) Pty. Ltd.	76	Hughes, R. Pty. Ltd.	61	Purvis-Glover Pty. Ltd.	69
Bodington, R. Pty. Ltd.	77	Hurley & Dewhurst Pty. Ltd.	54	Qualos Sales Pty. Ltd.	19
Bradshaw Automatics Pty. Ltd.	82	Imperial Chemical Industries of Aust. & N.Z. Ltd.	43, 47, 54	Raetz, C. B.	60
Brewer, W. H., Pty. Ltd.	58	Industrial Service Engineers Pty. Ltd.	23	Randle Photo Engraving Co. Pty. Ltd.	34
British Automatic Telephone & Electric Pty. Ltd.	73	International Business Machines Pty. Ltd.	81	Raymond, G. N., Pty. Ltd.	75
British Oil Engines (Aasia.) Pty. Ltd.	61	John, M. B. Ltd.	20	Raymors Pty. Ltd.	47
British Timken Ltd.	41	Jones & Rickard Pty. Ltd.	77	Richardson, H., Pty. Ltd.	32
British Xylonite (A.) Pty. Ltd.	40	Jones Bros. Coal Pty. Ltd.	76	Rigby, John, & Son Ltd.	45
Britstrand Distributors Ltd.	80	K. L. Distributors Pty. Ltd.	65	Rola Co. (Aust.) Pty. Ltd.	79
Bristol, H. V. & Co. Pty. Ltd.	66	Kennett, L. T., Ladders Pty. Ltd.	32	Schauble, W.	37
Brook Bros.	76	Lewis Office Machine Co.	35	Seler Decal Pty. Ltd.	35
Brown, E. T., Ltd.	29	Laminated Belt Co.	57	Sheraton G. L.	27
Brown, T. C. & Co. Pty. Ltd.	61	Lawrenson, H. H., Pty. Ltd.	65	Silicate & Dolomite of Aust. Pty. Ltd.	35
C.B.D. Platen Co.	55	Lempriere, O. T. & Co. Ltd.	3	Smith, A., Wallace	60
C.C. Engineering Industries Ltd.	4	Leo, Rogaly & Lewis Pty. Ltd.	26	Smith Bros. Pty. Ltd.	60
Carrier Air Conditioning Ltd.	14	Liberty Motors (Aust.) Pty. Ltd.	21	Smith, Copeland & Co. Pty. Ltd.	10, 38
Carr Fastener Co. of Aust. Ltd.	14	Ludowici, J. C. & Son Ltd.	83	Sortergraf Co.	56
Cartwright, O. F.	56	Lysaght Bros. & Co. Pty. Ltd.	74	Steelcraft Pty. Ltd.	76
Casolin Pty. Ltd.	26	Magnus Industrial Equipment Pty. Ltd.	84	Steen, W. B., Pty. Ltd.	46
Churchley, R. B., Pty. Ltd.	34	Main, T., & Sons Pty. Ltd.	57	Stowe Electric Pty. Ltd.	46
Claude, Neon, Ltd.	53	Martin, G. H., Pty. Ltd.	63	Swift & Company Limited	24
Code, F. W.	46	Martin Wilson Bros. Pty. Ltd.	22	Synchrotar Instrument Co. Pty. Ltd.	44
Creat Chemical Co. Pty. Ltd.	45	Masse Batteries Pty. Ltd.	72	Taylor & Wearing	28
Crystal Laporte Pty. Ltd.	37	Mastercraft Plastics	36	Thompson & Williams	60
Delta Woodturning Co.	50	Mathews, S. J., Pty. Ltd.	40	Thornthwaite, H. G., & Co.	41, 56
Don Metalcraft Co.	82	McKinlay, Fletcher Pty. Ltd.	35	Tinsley, Eliza, Pty. Ltd.	19
Downie, R. & E., Pty. Ltd.	78	McLellan, W. J., & Co. Pty. Ltd.	59	Toroid Industrial Supplies Pty. Ltd.	52
Dreadnought Valve Pty. Ltd.	72	Meehanite Research Institute of Australia	33	Trelliving, E. & Sons Ltd.	46
Dunkerley Hat Mills Ltd.	2	Meggitt Ltd.	60	Twentieth Century Exhibition	21
Durast Motor & Electric Industries Pty. Ltd.	39	Melbourne Wire Works	77	Tyree Electrical Co.	27
Eke-Ray Distributors Pty. Ltd.	46	Metals & Ores Pty. Ltd.	7	University Graham Instrument Co.	5
Efec Mfg. Co. Pty. Ltd.	11	Metal Coatings Pty. Ltd.	60	Vial, F., & Sons, Pty. Ltd.	78
Electronic Industries Imports Pty. Ltd.	35	Metal Products Pty. Ltd.	32	Walder, S., Pty. Ltd.	70
Engineering & Industrial Supplies Co.	37	Miller & Co.	36	Warman & Douglas	70
Excelsior Supply Co. Pty. Ltd.	75	Minerals Pty. Ltd.	78	Welded Products Ltd.	64
Eylelets Pty. Ltd.	69	Morrison & Beaby Ltd.	51	Wells, W. H., Pty. Ltd.	43
F.R.S. Ideal Spring Co. Ltd.	32	Morris, John	36	Wenkart, A. K.	36
Ferodo Ltd.	13	Motor Ladders Pty. Ltd.	32	Weston's Pty. Ltd.	9
Ferro Enamels (A.) Pty. Ltd.	39	Munday, Jas., & Co.	59	Whitlaw Springs Pty. Ltd.	69
Flavell, A., Pty. Ltd.	63	National Engineers Ltd.	4	Whitsig, P., & Co. Pty. Ltd.	61
Fordigraph Co. (Aust.)	17	Newbold General Refractories Ltd.	67	Woodward & Thurston Pty. Ltd.	77
Gadsden, J., Pty. Ltd.	54	Nicholson & Wallbank	31	Wormald Bros. Pty. Ltd.	71
Garrett, Davidson & Matthey Pty. Ltd.	55	Nilsen Industrial Group	68	Wright & Co.	24
Gayfer, G. R., & Co. Pty. Ltd.	42			Wright, E., & Co. Pty. Ltd.	45
General Abrasives Pty. Ltd.	44			Wunderlich Ltd.	66
Glover & Goods Pty. Ltd.	16			Yannoulatos, Emm. (Overseas) Pty. Ltd.	25
Goff, H. R., Pty. Ltd.	22				

get the highest transmission of Power

**LIFETIME
LEATHER BELTING**

WITH LUDOWICI

Records show that many Ludowici leather belts have been in continuous operation for over 30 years.

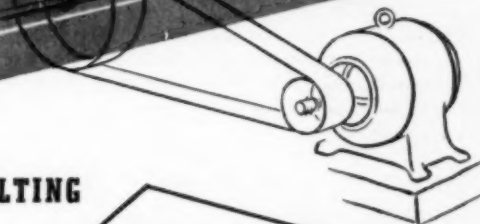
The J. C. Ludowici Technical Department will be pleased to advise you in specifying the most suitable leather belting drive that will save on "initial costs" and will keep saving in "operating costs".



J. C. LUDOWICI & SON LTD.

117 YORK STREET, SYDNEY, N.S.W.
20-25 QUEEN'S BRIDGE ST., STH. MELBOURNE, VIC.

OTHER LUDOWICI LINES OF EQUIPMENT INCLUDE:— Rubber Belting, Conveyor and Elevator Belting, Round Leather Belting, Textile Leathers, Belting Accessories, Leather Packings, High-Speed Grinder Belts, V Belt Drives, Industrial Clutches, Plain Bearings, Anti-Friction Bearings, Steel Shafting, Shafting Couplings, Shafting Hangers, Microid Bearing Mats, Porous Bronze Bushes, Gears, Pulleys, Wall Brackets, Variable-Speed Drives, Ludowici Pivot Drives, Flat-Seal Oil Retainers, Composition Packings, Lutec Industrial Plastics, Industrial Gloves, Rubber Hose, Lemcol Trucks, Wheels, Castors, etc., Ferry Chain Drives.



PIONEER

General purpose belting made from the very finest quality, specially selected hides and "wet-framed", stretched, Pioneer Belting is bonded throughout with a water and oil proof adhesive. Its uniform quality is guaranteed.

LUTAN

Lutan is made by a combination of the vegetable and chrome tanning processes. This double tanning feature gives Lutan special heat resisting qualities without shrinkage and at the same time maintaining a high coefficient of friction. Bonded throughout with Ludowici water and oil proof adhesives.

CHROMOL

Chromol Belting is made from mineral chrome-tanned leather processed to a Ludowici formula. This belting gives outstanding service under difficult operating conditions and is especially suitable in 2, 3 and 4 ply construction. Its balanced construction ensures equal distribution of stress throughout the width of the belt.

HERE'S THE COMBINATION
TO

LIFT YOUR PROFITS

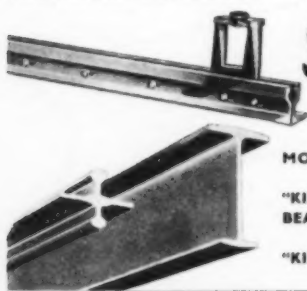
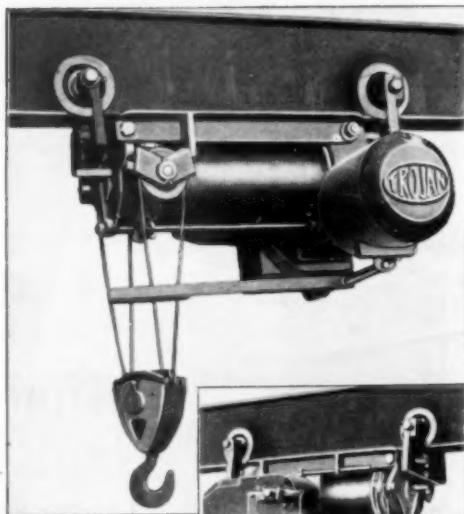


Electric HOISTS

Our representative will call, at your request, to prove to you that the fast, economical way to reduce high handling costs, to solve heavy handling problems, save valuable production and storage space in existing buildings, to increase overall manpower efficiency and reduce fatigue, is to install a TROJAN Electric HOIST on a RUNWAY to suit the job.

TROJAN Electric HOISTS provide exceptional strength and efficiency—embody only time-proven features—4-wheeled, ball-bearing trolleys, that swivel independently to ensure smooth operation on curves and straights alike—minimum distance from hook to under track (inches less than most hoists of similar type)—a minimum of wear and maintenance through years of hard service.

★ Two views (right) of the j-ton model TROJAN Electric Hoist



3 TYPES OF RUNWAYS . . NOW AVAILABLE

MONORAIL

"KING" DOUBLE
BEAD TRACK

"KING" SUPERTRACK

All types can be equipped with 2 and 3-way Switches, Turn-tables, Weighing Sections, etc.—supplied either as Plain or Electrified Track—and, if required, can be connected with Interlocks to Overhead Travelling Cranes.

MAGNUS INDUSTRIAL EQUIPMENT PTY. LTD.

368 COLLINS STREET, MELBOURNE. PHONE MU6957 (3 lines)

SPECIALISTS IN MATERIALS HANDLING EQUIPMENT — CONVEYING AND ELEVATING ENGINEERS

NEW SOUTH WALES
MAGNUS INDUSTRIAL
EQUIPMENT PTY. LTD.,
1 Unwin's Bridge Rd., ST.
PETERS. Phone LA 3329.

QUEENSLAND
BOURKE & RADFORD,
129 Adelaide St., BRISBANE.
Phone B 3670.

SOUTH AUSTRALIA
PASCOE & CO. LTD., 282
Port Road, WOODVILLE.
Phone M 7127.

WESTERN AUSTRALIA
ATKINS (W.A.) LIMITED,
894 Hay Street, PERTH.
Phone BA 2061.

MAGNUS ARE ALSO DISTRIBUTORS AND MANUFACTURERS OF ALL TYPES OF CONVEYORS AND MATERIALS HANDLING EQUIPMENT, INCLUDING THAT OF GEO. W. KING LTD., OF ENGLAND, ELECTRICAL CHAIN BLOCKS, OVERHEAD CRANES, ETC.—AUTOMATIC TRANSPORTATION CO., BATTERY OPERATED TRANSPORT AND LIFT TRUCKS—GRAISELEY BATTERY OPERATED TRANSPORT TRUCKS—BIN LEVEL INDICATORS—HUWOOD BELT CONVEYORS.

MID-AM